Report on the 2007-2008 Northern Uniform Winter Wheat Scab Nursery (NUWWSN) and the Preliminary Northern Uniform Winter Wheat Scab Nursery (PNUWWSN)

Prepared by Clay Sneller*, Larry Herald, Brian Sugerman, Mary Guttieri, and Pierce Paul
The Ohio Agricultural Research and Development center, department of Horticulture and Crop Science, The Ohio Agricultural Research and Development center, department of Plant Pathology, 1680 Madison Ave, Wooster, Ohio, 44691
* sneller.5@osu.edu

Each year the USWBSI funds the evaluation of Fusarium Head Blight (FHB, caused by *Fusarium graminearum*) of soft winter wheat cultivars and germplasm adapted to the northern US. In the 2007-08 season there were two tests: the Northern Uniform Winter Wheat Scab Nursery (NUWWSN) and the preliminary NUWWSN (PNUWWSN). Field data from these two tests were provided by 13 cooperators (Table 0). The traits evaluated are listed in table 1. Grain was evaluated for milling and baking quality by Dr. Ed Souza of the the USDA Soft Wheat Quality Lab. Dr. Gina Brown-Guedira of the USDA Small Grains Genotyping Lab provided marker data.

The NUWWSN consisted of 60 entries: 4 checks and 56 breeding lines from 14 programs (Table 2). This included several hard wheat lines from NE and KS. The NUWWSN has evaluated in a total of 12 locations (Table 0). The PNUWWSN had 60 entries: 4 checks and 56 breeding lines from 10 programs (Table 3) and was evaluated in eight locations (Table 0).

Cooperators collect replicated data and submit means to the coordinator. The means from individual locations are used in an analysis over locations. The genotype x environment interaction (GEI) term is the error and is used to calculate an LSD (0.05). The LSD value is used to determine if a mean is statistically equal to the lowest entry mean (such values are designated with an "l") or the highest entry mean (such values are designated with an "h").

The GEI can not be tested for significance. The GEI appeared important for all FHB traits except GH in the NUWWSN as the sum of squares from the GEI was at least 1.5 times greater than the genotype sum f squares (Table 4). This also occurred for INC, SEV, and IND in the PNUWWSN (Table 4).

There were significant and positive correlations among all FHB traits in both the NUWWSN and PNUWWSN (Table 5). The FHB means over locations were not well correlated to heading date or height. This was not true though when analyzed by location (Table 6). In some locations, heading date was positively correlated to some FHB traits, but negatively correlated to FHB traits in other locations.

Table 0. Cooperators and locations for the 2008 NUWWSN and PNUWWSN.

CODE	COOPERATOR (S)	INSTITUTE	LOCATION	NUWWSN	PNUWWSN
ILURB	Fred Kolb, Eric Brucker	University of Illinois	Urbana, IL	yes	yes
INLAY	Herb Ohm	Purdue University	Lafayette, IN	yes	yes
KSMAN	Bill Bockus, Mark Davis	Kansas State University	Manhattan, KS	yes	no
KYLEX	David Van Sanford, Nikki Mundell	Unversity of Kentucky	Lexington, KY	yes	yes
MDSAL	Jose Costa	University of Maryland	Salisbury, MD	yes	no
MIELA	Janet Lewis, Lee Siler	Michigan State University	East Lansing, MI	yes	yes
MOCOL	Anne McKendry, David Teague	University of Missouri	Columbia, MO	yes	yes
NEMEA	Stephen Baenziger, S Wegulo	University of Nebraska	Mead, NE	yes	no
NYITH	Mark Sorrells, Gary Bergstrom	Cornell University	Ithaca, NY	yes	no
OHWOO	Clay Sneller, Pierce Paul	The Ohio State University	Wooster, Ohio	yes	yes
ONRID	Lilly Tamburic, Mike Holtzworth	University of Guelph, Ridgetown	Riedgetown, Ontario	yes	yes
ROMAN	Mariana Ittu	National Agricultural Research-Development Institute Fundulea	Calarasi, Romania	yes	yes
VABLA	Carl Griffey, Shuyu Liu	Virginia Tech	Blacksburg, VA	yes	yes

Table 1. Traits assessed in the 2007-08 PNUWWSN and NUWWSN

Code	Trait	Description	PNUWWSN Locations	NUWWSN Locations
SEV	Disease severity from field tests	% of infected spikelets in an infected head.	ILURB, INLAF, KYLEX, MIELA, MOCOL, OHWOO, ONRID, VABLA	ILURB, INLAF, KYLEX, MDSAL, MIELA, MOCOL, NEMEA, NYITH, OHWOO, ONRID, VABLA
INC	Disease incidence	% of heads with at least one infected spikelets	ILURB, KYLEX, MIELA, MOCOL, ONRID, VABLA	ILURB, KYLEX, MDSAL, MIELA, MOCOL, NEMEA, NYITH, OHWOO, ONRID, VABLA
IND	Disease index	IND = (SEVxINC)/100	ILURB, KYLEX, MIELA, MOCOL, OHWOO, ONRID, ROMAN, VABLA	ILURB, KSMAN, KYLEX, MDSAL, MIELA, MOCOL, NEMEA, NYITH, OHWOO, ONRID, ROMAN, VABLA
FDK	Fusarium damaged kernels	Either a visual assessment of the percent infected kernels, or a percent of scabby seed by weight	ILURB, KYLEX, MOCOL, ROMAN	ILURB, KSMAN, KYLEX, MDSAL,MOCOL, ROMAN
ISK	Composite of head and kernel traits	ISK Index = .3 (Severity) + .3 (Incidence)+.4 (FDK)	ILURB, KYLEX, MOCOL, ROMAN	ILURB, KSMAN, KYLEX, MDSAL,MOCOL, ROMAN
DON	DON (vomitoxin)	PPM of vomitoxin in grain	ILURB, INLAF, KYLEX, VABLA	ILURB, INLAF, KSMAN, KYLEX, MDSAL, NEMEA, NYITH, OHWOO, VABLA
GH	Greenhouse severity	Same as SEV except from greenhouse	ILURB	ILURB, MOCOL
MILL SCORE	Milling score	A relative composite score based on traits that affect milling		INLAF
BAKE SCORE	Baking score	A relative composite score based on traits that affect baking		INLAF
TW SCORE	Test weight score	A relative score based on TW		INLAF
SE SCORE	Softness equivalent score	A relative score based on softness equivalent		INLAF
TW	Test weight	Test weight in lbs/bu of clean grain		INLAF
SOFTNESS EQUIVALENT	Softness equivalent	Percentage of flour that passes through a 94 mesh screen		INLAF
FLOUR PROTEIN	Flour protein	NIR estimate of flour protein percentage (based on 13% moisture)		INLAF
LACTIC ACID SRC	Lactic acid solvent retention capacity	A measure of gluten strength based on percentage of LA solvent retained by a flour sample after centrifugation		INLAF
SUCROSE SRC	Sucrose solvent retention capacity	A measure of pentosan content, and thus water absorption, based on percentage of sucrose solvent retained by a flour sample after centrifugation		INLAF
FLOUR YIELD	Flour yield	The weight of the flour that passes through a 40 mesh screen after milling, adjusted for moisture and SE, expressed as percentage of milled grain.		INLAF

Table 2. Entries in the 2008 NUWWSN

ENTRY	NAME	PEDIGREE	Source
1	ERNIE	CHECK	
2	TRUMAN	CHECK	
3	FREEDOM	CHECK	
4	PIONEER 2545	CHECK	
5	MSU Line E6002	VA96W-403-WS / CJ9403	Lewis, Michigan State University
6	MSU Line E6001	Pioneer 25W60 / CJ 9306	Lewis, Michigan State University
7	MSU Line E6003	VA96W-403-WS / W14	Lewis, Michigan State University
8	MSU Line E5011	Caledonia / NY88024-117	Lewis, Michigan State University
9	P.99600A2-4-93	9560//9811/3/Fdm/201R	Ohm, Purdue University
10	P.0179A1-17	Fdm/Gfd//92829/Patton	Ohm, Purdue University
11	P.011010A1-15	97395/981129//INW0316	Ohm, Purdue University
12	P.03112A1-7-3	97395//INW0315/99794	Ohm, Purdue University
13	KS980512-2-2	T67/X84W063-9-45//K92/3/SNF/4/X86509-1-1/X84W063-9-39-2//K92	Bockus, Kansas State University
14	KS05HW14-3	KS98HW452(KS91H153/KS93HW255)/CO960293//KS920709B-5-2(T67/X84W063-9-45//K92)	Bockus, Kansas State University
15	MO050143	MO 11769/Madison	McKendry, University of Missouri
16	MO050699	950016/3/950016//90X54-1-1/MO 91-1009	McKendry, University of Missouri
17	MO050921	Ernie/Truman "S"	McKendry, University of Missouri
18	MO050101	MO 11769/Madison	McKendry, University of Missouri
19	VA05W-425	Roane/3/Ning7840/Coker9904//Pioneer2552	Griffey, Virginia Tech
20	VA05W-775	3010-9-30-5 (Roane*2//Futai 8944/ Roane/3/Roane), BC3F6	Griffey, Virginia Tech
21	VA05W-777	3007-8-12-2 (Roane*2//W14/Roane /3/Roane), BC3F6	Griffey, Virginia Tech
22	VA05W-534	Goldfield/Tribute//Gibson	Griffey, Virginia Tech
23	MD01W233-06-1	McCormick/Choptank	Costa, University of Maryland
24	MD01W233-06-16	McCormick/Choptank	Costa, University of Maryland
25	MD99W483-06-11	VA97W358/RENWOOD3260	Costa, University of Maryland
26	NYCalresel-L	Reselection from Caledonia	Sorrells, Cornell University
27	NY94052-9340	Pio2737w/Harus	Sorrells, Cornell University
28	NYW103-1-9100	Cayuga/Caledonia	Sorrells, Cornell University
29	NYW103-70-9232	Cayuga/Caledonia	Sorrells, Cornell University
30	NY93246SP-9070	Harus/3/92145:91009(Geneva/U1273-5-18-8)/NY73116-4W	Sorrells, Cornell University
31	SE911492-4	TAISHANG1/GR863//CARDINAL	Fioritto, Sunbeam Extract
32	SE89-1873-2	NASW84-345/Coker9835//0H419/OH389	Fioritto, Sunbeam Extract
33	SE98-1089-34	P25R57/SE1694-12	Fioritto, Sunbeam Extract
34	SE93-1094-8	OH489/OH490	Fioritto, Sunbeam Extract
35	NE05418	Betty (KS84063-11-6-42)/ SD97457 (= Tomahawk/Bennet)	Baenziger, University of Nebraska
36	NE05549	NI98414 (=NE90614/NE87612//NE87612)/Wesley	Baenziger, University of Nebraska
37	NE05537	NI97435 (=TAM202/NE86606 (=WRR/SUT//MOW6811/3/AGATE..))/NE94632 (=ABILENE/NORKAN//RAWHIDE)/2/ KS89180B-2-1 (=KS8910-73/KS8010-1-4-2//107349/KARL)	Baenziger, University of Nebraska
38	NE03488	KARIEGA/PRONGHORN//Millennium sib	Baenziger, University of Nebraska
39	NE01643	Millennium sib//Seward/Archer	Baenziger, University of Nebraska
40	KY00C-2059-16	91C-170-3/2552	Van Sanford, University of Kentucky
41	KY00C-2143-08	90C-048-59/90C-160-14	Van Sanford, University of Kentucky
42	KY00C-2755-03	2552/Allegiance	Van Sanford, University of Kentucky
43	KY97C-0321-05-2	Kristy/VA94-52-25//2540	Van Sanford, University of Kentucky
44	M04*5109	VA94-54-479/PIO2628	Fogleman, Syngenta
45	M04-4802	FFR518//ELKHART/MV18	Fogleman, Syngenta
46	M03-3616-B11	HOPEWELL/PATTON	Fogleman, Syngenta
47	M03-3616-C10	HOPEWELL/PATTON	Fogleman, Syngenta
48	OH02-13567	OH581/IN83127E1-24-5-2-1-31//5088B-D-32-1/OH601	Sneller, Ohio State University
49	OH03-235-2	OH552/HOPEWELL	Sneller, Ohio State University
50	OH02-12678	FOSTER/HOPEWELL//OH581/OH569	Sneller, Ohio State University
51	OH02-7217	P92118B4-2/OH561	Sneller, Ohio State University
52	DH 22/8	Ruby/Frontana #1 x AC RON/ Ruby/Frontana #1	Tamburic, U Guelph -Ridgetown
53	DH 22/24	Ruby/Frontana #1 x AC RON/ Ruby/Frontana #1	Tamburic, U Guelph -Ridgetown
54	DH 19/176B	AC RON/WEKO609H3 x AC RON	Tamburic, U Guelph -Ridgetown
55	DH F/SF, 23	Frontana x Sumai 3	Tamburic, U Guelph -Ridgetown
56	IL02-18228	Pio25R26/9634-24437//95-4162	Kolb, University of Illinois
57	IL02-19463	Patton / Cardinal // IL96-2550	Kolb, University of Illinois
58	IL04-10118	IL95-2516/ IL98-12212	Kolb, University of Illinois
59	IL04-10721	IL95-4162/ IL97-7010	Kolb, University of Illinois
60	IL04-10741	IL95-4162/ IL97-7010	Kolb, University of Illinois

Table 3. Entries in the 2008 PNUWWSN

ENTRY	NAME	PEDIGREE	Source
1	ERNIE	CHECK	
2	TRUMAN	CHECK	
3	FREEDOM	CHECK	
4	PIONEER 2545	CHECK	
5	MSU Line E2043	Pioneer 2552/Pioneer 2737W	Lewis, Michigan State University
6	MSU Line E6059	D9070 / Pioneer 2552	Lewis, Michigan State University
7	MSU Line E6042	VA96W-403-WS / CJ9403	Lewis, Michigan State University
8	MSU Line E6038	VA96W-403-WS / CJ9403	Lewis, Michigan State University
9	MSU Line E5024	D6234 / Pioneer 25W33	Lewis, Michigan State University
10	P.992192A1-5-4-5-81	92145//201R/Patton	Ohm, Purdue University
11	P.0172A1-12-1	97395/981129	Ohm, Purdue University
12	P.0175A1-37-4	981419/97397	Ohm, Purdue University
13	P.04281A1-4-5	INW0304/9811//92823/Ernie	Ohm, Purdue University
14	P.04287A1-16	INW0316*2/INW0304//9346/CS5A	Ohm, Purdue University
15	P.03630A1-18	99751/INW0315//981358/97462	Ohm, Purdue University
16	MO050600	MO 960903/Bess 'S'	McKendry, University of Missouri
17	MO050261	MO 94-182/VA 91-54-219	McKendry, University of Missouri
18	MO051150	960815/IL 91-14163	McKendry, University of Missouri
19	MO050617	960815/IL 91-14163	McKendry, University of Missouri
20	MO041020	960429/960112	McKendry, University of Missouri
21	MO050917	Truman 'S'/960815	McKendry, University of Missouri
22	VA06W-553	Roane/3/Ning7840/Coker9904//Pioneer2552	Griffey, Virginia Tech
23	VA06W-558	VA96W-348/P92823A1-1-4-4-5(Clark*4/ Ning7840)// McCormick	Griffey, Virginia Tech
24	VA06W-561	OH618//Roane/Sisson"S" (VA96W234)	Griffey, Virginia Tech
25	VA06W-615	Roane/OH 552//RC-Strategy (VA98W-586)	Griffey, Virginia Tech
26	VA06W-622	IL89-6489/Sisson"S" (VA97W-375)// Ernie	Griffey, Virginia Tech
27	TRIBUTE	VA98W-593=VA92-51-39(IN71761A4-31-5-48//71-54-147/MCN1813)/AL870365 (CK747*2/Amigo)	Griffey, Virginia Tech
28	BDLS. HONEY-6	NASW84-345/Coker9835//0H419/OH389	Fioritto, Sunbeam Extract
29	SE98 1083-14	PION25R57/OH546	Fioritto, Sunbeam Extract
30	SEKY93 C-1699-14	MO800071-56/PION2545//KY88C	Fioritto, Sunbeam Extract
31	SE94 C-0480-2-2	84C-048-2-1/PION2510//FFR555	Fioritto, Sunbeam Extract
32	SE98 1106-6	OH546/SE1694-12	Fioritto, Sunbeam Extract
33	SE94-1012-25	T814/L880119	Fioritto, Sunbeam Extract
34	KY02C-3005-25	25R18/MCCORMICK	Van Sanford, University of Kentucky
35	KY02C-3005-44	25R18/MCCORMICK	Van Sanford, University of Kentucky
36	KY02C-3008-05	25R18/92C-0010-17	Van Sanford, University of Kentucky
37	KY02C-3004-04	25R18/Tribute	Van Sanford, University of Kentucky
38	KY01C-1542-07	Tribute/BL 940582//Tribute/91C-170-3	Van Sanford, University of Kentucky
39	KY99C-1205-06-1	25R26/ USG 3209//2540	Van Sanford, University of Kentucky
40	M04-4566	BRADLEY/ROANE	Fogleman, Syngenta
41	M04-4715	MASON/ERNIE	Fogleman, Syngenta
42	M05-1172	M94-1048-1/IO2552	Fogleman, Syngenta
43	M05*1589	GA871339/PIO2540	Fogleman, Syngenta
44	M05-1531	LA87167-D8-/P92118B4-2	Fogleman, Syngenta
45	OH04-213-39	HOPEWELL/IL94-6858	Sneller, Ohio State University
46	OH04-264-58	OH645/HOPEWELL	Sneller, Ohio State University
47	OH04-268-39	HOPEWELL/VA96-54-372	Sneller, Ohio State University
48	OH04-176-29	P.92227C5-1-1/BL930390	Sneller, Ohio State University
49	OH03-41-45	IL91-14167/OH599	Sneller, Ohio State University
50	DH ACF112103 -8T	AC RON x SD97060	Tamburic, U Guelph -Ridgetown
51	RCUOGF110202D/4	SD97060 x Ringo Star	Tamburic, U Guelph -Ridgetown
52	RCUOGDHACF1109O2D	SD97060 x Freedom	Tamburic, U Guelph -Ridgetown
53	RCATTF174/1C	AC Ron x 25R18	Tamburic, U Guelph -Ridgetown
54	RCATTF203/2	AC Ron x 25R18	Tamburic, U Guelph -Ridgetown
55	RCATL31	Ruby/Frontana #1 x ACRON/ AC RON x SVP72017-17-5-10-1	Tamburic, U Guelph -Ridgetown
56	IL01-34159	IL84-2191 / IL87-2834 // IL90-6364 / IL96-24851 (= IL90-6364 // IL90-9464 / Ning 7840)	Kolb, University of Illinois
57	IL79-002T-B-B	IL94-6727 / IL96-6472	Kolb, University of Illinois
58	IL04-7874	G65201/ IL98-12212	Kolb, University of Illinois
59	IL04-8445	IL94-1653/ IL97-3578	Kolb, University of Illinois
60	IL04-17204	IL97-3578/ Ernie	Kolb, University of Illinois

Table 4. Summary of ANOVA statistics from the 2008 NUWWSN and PNUWWSN

NUWWSN

	R2	CV	% SS Geno	% SS Env	% SS GEI	SS GEI / SS Geno
SEV	0.75	21.4	17.1	52.6	30.3	1.77
INC	0.59	32.6	5.4	73.6	21.0	3.90
IND	0.69	38.7	18.4	53.6	28.0	1.53
FDK	0.71	37.4	12.4	51.4	36.2	2.92
ISK	0.76	20.8	19.6	50.0	30.4	1.55
DON	0.65	52.2	18.0	51.2	30.8	1.71
GH			66.7	3.1	30.2	0.45
HD	0.97	1.2	6.3	89.9	3.8	0.61
HGT	0.93	4.7	36.0	57.0	7.0	0.19

PNUWWSN

	R2	CV	% SS Geno	% SS Env	% SS GEI	SS GEI / SS Geno
SEV	0.75	21.4	11.3	63.4	25.3	2.23
INC	0.59	32.6	25.6	34.0	40.4	1.58
IND	0.69	38.7	20.3	49.0	30.7	1.51
FDK	0.71	37.4	23.9	47.4	28.7	1.20
ISK	0.76	20.8	23.6	52.0	24.5	1.04
DON	0.65	52.2	33.6	31.9	34.5	1.03
GH						
HD	0.97	1.2	6.4	90.8	2.7	0.43
HGT	0.93	4.7	42.0	51.0	7.0	0.17

Table 5. Correlation of means over all locations for the 2008 NUWWSN (above diagonal) and PNUWWSN (below diagonal)

	INC	SEV	IND	FDK	ISK	DON	GH	HD	HGT
INC	1	0.90	0.90	0.72	0.85	0.73	0.46	n	n
SEV	0.77	1	0.96	0.79	0.90	0.84	0.54	n	n
IND	0.84	0.95	1	0.80	0.94	0.83	0.53	n	n
FDK	0.69	0.63	0.73	1	0.91	0.75	0.54	n	n
ISK	0.81	0.78	0.90	0.91	1	0.80	0.55	n	n
DON	0.74	0.60	0.68	0.57	0.66	1	0.47	n	n
GH	0.32	0.60	0.60	0.36	0.46	0.34	1	n	n
HD	0.37	n	n	0.26	n	0.38	n	1	0.53
HGT	n	0.26	n	n	n	n	n	0.53	1

NUWWSN correlations are above the diagonal
PNUWWSN correlations are below the diagonal

n = not significant at p <= 0.05

Table 6. Correlation, by location, of heading date with FHB traits from the 2008 NUWWSN and PNUWWSN

NUWWSN						
	INC	SEV	IND	FDK	ISK	DON
ILURB	n	n	n	n	n	n
INLAF	n					n
KSMAN			-0.33	n	-0.33	n
KYLEX	0.54	0.38	0.43	n	0.46	n
MDCLA	-0.68	-0.61	-0.65	-0.37	-0.71	n
MIELA	0.3	0.44	0.44			
MOCOL	n	n	n	-0.3	-0.27	
NEMEA						
NYITH	n	n	n			n
OHWOO	0.29	n	0.3			0.26
ONRID	n	n	n			
ROMAN						
VABLA	0.5	n	n			0.43
PNUWWSN						
	INC	SEV	IND	FDK	ISK	DON
ILURB	n	n	n	n	n	0.29
INLAF	n					n
KYLEX	0.6	0.47	0.57	n	0.56	n
MIELA	n	n	n			
MOCOL	n	n	n	n	n	
OHWOO			n			
ONRID	0.28	0.3	0.33			
ROMAN						
VABLA	0.61	-0.38	n			0.63
n = not significant at p <= 0.05						
blank indicates correlation could not be estimated						

Table 7. Summary of means from 2008 NUWWSN

ENTRY	NAME	SEV	INC	IND	FDK	ISK	DON	GH	#l	#h
1	ERNIE	57.4	31.7	22.7	28.5 h	43.7	9.9 l	13.7 l	2	1
2	TRUMAN	47.4 l	21.6 l	14.5 l	16.6 l	31.5 l	6.3 l	4.5 l	7	0
3	FREEDOM	57.4	34.9	23.1	19.5 l	38.5	9.0 l	18.2 l	3	0
4	PIONEER 2545	74.9 h	52.2 h	42.8	36.3 h	56.6 h	18.4	48.3 h	0	5
5	MSU Line E6002	55.2	30.7	25.6	28.4 h	43.9	12.5	25.8 l	1	1
6	MSU Line E6001	61.2	35.1	25.7	26.0 l	41.7	11.0	6.7 l	2	0
7	MSU Line E6003	48.5 l	17.6 l	10.5 l	11.5 l	24.9 l	6.4 l	7.0 l	7	0
8	MSU Line E5011	68.1 h	45.1	40.2	32.2 h	51.7 h	13.9	15.3 l	1	3
9	P.99600A2-4-93	66.6 h	38.1	33.0	33.9 h	51.6 h	10.1 l	26.5 l	2	3
10	P.0179A1-17	63.6	36.3	26.3	30.4 h	44.0	12.8	18.6 l	1	1
11	P.011010A1-15	67.2 h	40.7	33.8	23.6 l	47.8 h	11.4	15.5 l	2	2
12	P.03112A1-7-3	60.7	34.3	22.6	24.5 l	37.1	10.2 l	5.6 l	3	0
13	KS980512-2-2	60.9	40.2	27.9	22.4 l	42.0	16.2	16.1 l	2	0
14	KS05HW14-3	71.9 h	39.3	34.1	32.5 h	48.9 h	14.7	30.2 l	1	3
15	MO050143	52.6 l	28.7	19.4 l	17.3 l	32.2 l	6.5 l	6.7 l	6	0
16	MO050699	61.1	35.5	25.9	26.5	39.8	9.3 l	5.0 l	2	0
17	MO050921	49.6 l	24.1 l	16.4 l	16.0 l	28.2 l	5.7 l	4.9 l	7	0
18	MO050101	49.9 l	27.3	19.5	16.9 l	33.1 l	7.2 l	8.7 l	5	0
19	VA05W-425	60.0	33.1	23.4	24.3 l	38.8	6.7 l	10.3 l	3	0
20	VA05W-775	55.4	28.8	17.7 l	22.5 l	34.7 l	4.4 l	4.1 l	5	0
21	VA05W-777	57.2	28.1	18.5 l	20.7 l	34.7 l	5.5 l	4.9 l	5	0
22	VA05W-534	52.6 l	24.9 l	17.0 l	17.5 l	34.8 l	4.8 l	17.9 l	7	0
23	MD01W233-06-1	53.5 l	26.1	18.8 l	21.4 l	39.0	4.5 l	4.8 l	5	0
24	MD01W233-06-16	56.6	28.5	20.3	22.3 l	37.0 l	5.8 l	20.4 l	4	0
25	MD99W483-06-11	63.3	38.8	27.9	34.3 h	44.0	7.2 l	70.0 h	1	2
26	NYCalresel-L	60.0	40.2	33.1	37.5 h	52.4 h	13.0	51.1 h	0	3
27	NY94052-9340	59.1	31.7	26.2	28.4 h	42.9	11.3	11.2 l	1	1
28	NYW103-1-9100	61.6	37.0	33.1	22.3 l	43.1	10.8	17.8 l	2	0
29	NYW103-70-9232	66.0 h	42.3	38.1	28.0	48.3 h	15.8	34.1 l	1	2
30	NY93246SP-9070	61.9	34.9	32.7	32.7 h	49.6 h	11.5	18.8 l	1	2
31	SE911492-4	64.1	33.2	25.5	24.4 l	39.8	9.2 l	34.2 l	3	0
32	SE89-1873-2	65.5	39.4	31.9	27.0	46.0	12.8	62.2 h	0	1
33	SE98-1089-34	78.5 h	60.7 h	52.1 h	39.2 h	58.6 h	20.8	40.7 h	0	6
34	SE93-1094-8	67.2 h	39.9	32.8	36.1 h	50.8 h	17.4	29.9 l	1	3
35	NE05418	52.0 l	26.3	19.7	26.0 l	39.4	7.3 l	23.7 l	4	0
36	NE05549	68.2 h	46.6	41.0	28.3 h	52.1 h	13.8	31.3 l	1	3
37	NE05537	54.8	36.7	24.7	22.6 l	38.7	10.6	32.2 l	2	0
38	NE03488	62.5	33.7	27.3	22.9 l	39.8	11.5	58.8 h	1	1
39	NE01643	66.4 h	37.7	34.0	28.1 h	48.9 h	13.7	33.7 l	1	3
40	KY00C-2059-16	58.0	36.6	24.8	22.4 l	37.2	14.3	46.3 h	1	1
41	KY00C-2143-08	59.2	32.8	21.2	18.8 l	35.8 l	9.1 l	39.5 h	3	1
42	KY00C-2755-03	61.2	39.0	30.1	24.7 l	44.7	12.1	36.4	1	0
43	KY97C-0321-05-2	67.2 h	46.7	41.6	34.5 h	53.0 h	16.1	49.5 h	0	4
44	M04*5109	59.5	33.5	26.6	29.5 h	46.3	10.3 l	44.6 h	1	2
45	M04-4802	65.5	41.0	32.8	32.6 h	50.1 h	13.9	45.5 h	0	3
46	M03-3616-B11	53.4 l	26.6	19.3 l	18.3 l	34.9 l	7.7 l	13.8 l	6	0
47	M03-3616-C10	51.9 l	25.4 l	17.3 l	26.8	36.8 l	9.6 l	17.9 l	6	0
48	OH02-13567	54.1 l	28.7	18.3 l	23.6 l	36.5 l	7.2 l	6.2 l	6	0
49	OH03-235-2	59.0	40.7	31.4	28.3 h	47.0 h	11.9	24.5 l	1	2
50	OH02-12678	54.4 l	27.0	20.3	17.0 l	36.0 l	7.5 l	23.3 l	5	0
51	OH02-7217	59.4	28.3	21.2	17.7 l	35.7 l	10.1 l	15.5 l	4	0
52	DH 22/8	58.4	36.8	28.5	30.6 h	47.3 h	11.8	30.1 l	1	2
53	DH 22/24	42.4 l	19.5 l	12.5 l	18.1 l	27.8 l	6.6 l	9.0 l	7	0
54	DH 19/176B	67.4 h	42.4	36.1	28.4 h	47.2 h	17.6	8.1 l	1	3
55	DH F/SF, 23	64.7	50.1 h	39.1	43.1 h	55.9 h	29.3 h	43.1 h	0	5
56	IL02-18228	41.9 l	15.3 l	13.0 l	14.4 l	29.6 l	4.5 l	24.1 l	7	0
57	IL02-19463	57.4	31.9	22.0	12.9 l	34.1 l	7.1 l	16.3 l	4	0
58	IL04-10118	55.9	24.7 l	18.9 l	18.6 l	36.8 l	7.7 l	14.5 l	6	0
59	IL04-10721	61.1	28.1	21.0	16.8 l	35.5 l	8.7 l	7.6 l	4	0
60	IL04-10741	48.7 l	24.1 l	18.9 l	22.6 l	36.7 l	6.1 l	29.8 l	7	0
	AVERAGE	59.4	34.0	26.2	25.1	41.6	10.7	23.9		
	MINUMUM	41.9	15.3	10.5	11.5	24.9	4.4	4.1		
	MAXIMUM	78.5	60.7	52.1	43.1	58.6	29.3	70.0		
	LSD(0.05)	12.8	10.6	9.0	15.0	12.1	6.0	31.0		
	# environments	10	11	12	5	6	9	2		

Table 8. Summary of means for the best (top of table) and worst entries in the 2008 NUWWSN.

ENTRY	NAME	SEV	INC	IND	FDK	ISK	DON	GH	#l	#h
56	IL02-18228	41.9 l	15.3 l	13.0 l	14.4 l	29.6 l	4.5 l	24.1 l	7	0
22	VA05W-534	52.6 l	24.9 l	17.0 l	17.5 l	34.8 l	4.8 l	17.9 l	7	0
17	MO050921	49.6 l	24.1 l	16.4 l	16 l	28.2 l	5.7 l	4.9 l	7	0
60	IL04-10741	48.7 l	24.1 l	18.9 l	22.6 l	36.7 l	6.1 l	29.8 l	7	0
2	TRUMAN	47.4 l	21.6 l	14.5 l	16.6 l	31.5 l	6.3 l	4.5 l	7	0
7	MSU Line E6003	48.5 l	17.6 l	10.5 l	11.5 l	24.9 l	6.4 l	7.0 l	7	0
53	DH 22/24	42.4 l	19.5 l	12.5 l	18.1 l	27.8 l	6.6 l	9.0 l	7	0
15	MO050143	52.6 l	28.7	19.4 l	17.3 l	32.2 l	6.5 l	6.7 l	6	0
48	OH02-13567	54.1 l	28.7	18.3 l	23.6 l	36.5 l	7.2 l	6.2 l	6	0
58	IL04-10118	55.9	24.7 l	18.9 l	18.6 l	36.8 l	7.7 l	14.5 l	6	0
46	M03-3616-B11	53.4 l	26.6	19.3 l	18.3 l	34.9 l	7.7 l	13.8 l	6	0
47	M03-3616-C10	51.9 l	25.4 l	17.3 l	26.8	36.8 l	9.6 l	17.9 l	6	0
20	VA05W-775	55.4	28.8	17.7 l	22.5 l	34.7 l	4.4 l	4.1 l	5	0
23	MD01W233-06-1	53.5 l	26.1	18.8 l	21.4 l	39.0	4.5 l	4.8 l	5	0
21	VA05W-777	57.2	28.1	18.5 l	20.7 l	34.7 l	5.5 l	4.9 l	5	0
18	MO050101	49.9 l	27.3	19.5	16.9 l	33.1 l	7.2 l	8.7 l	5	0
50	OH02-12678	54.4 l	27.0	20.3	17 l	36.0 l	7.5 l	23.3 l	5	0
43	KY97C-0321-05-2	67.2 h	46.7	41.6	34.5 h	53.0 h	16.1	49.5 h	0	4
4	PIONEER 2545	74.9 h	52.2 h	42.8	36.3 h	56.6 h	18.4	48.3 h	0	5
55	DH F/SF, 23	64.7	50.1 h	39.1	43.1 h	55.9 h	29.3 h	43.1 h	0	5
33	SE98-1089-34	78.5 h	60.7 h	52.1 h	39.2 h	58.6 h	20.8	40.7 h	0	6
	AVERAGE	59.4	34.0	26.2	25.1	41.6	10.7	23.9		
	MINUMUM	41.9	15.3	10.5	11.5	24.9	4.4	4.1		
	MAXIMUM	78.5	60.7	52.1	43.1	58.6	29.3	70.0		
	LSD(0.05)	12.8	10.6	9.0	15	12.1	6	31.0		
	# environments	10	11	12	5	6	9	2		

Table 9. Summary of means from the 2008 PNUWWSN

NAME	SEV	INC	IND	FDK	ISK	DON	GH	#l	#h
ERNIE	57.9 l	24.2 l	18.5 l	25.5 l	41.7	11.5	10.5	4	0
TRUMAN	58.4 l	18.0 l	17.2 l	25.1 l	42.4	10.6	6.4	4	0
FREEDOM	67.5	34.0	24.9	43.1 h	49.2 h	9.5 l	12.5	1	2
PIONEER 2545	85.8 h	46.6 h	42.5 h	57.9 h	62.7 h	21.7 h	98.8	0	6
MSU Line E2043	84.5 h	39.1	33.2	62.0 h	60.0 h	22.9 h	10.5	0	4
MSU Line E6059	85.5 h	40.6 h	33.8 h	47.8 h	56.9 h	27.5 h	24.8	0	6
MSU Line E6042	50.8 l	30.2	20.7	14.2 l	34.7 l	9.3 l	49.7	4	0
MSU Line E6038	63.3	36.9	25.8	29.0 l	44.6	11.9	48.5	1	0
MSU Line E5024	76.0 h	37.1	29.1	27.1 l	47.3	16.6	26.7	1	1
P.992192A1-5-4-5-81	79.6 h	38.0	32.7	48.4 h	55.8 h	11.9	22.3	0	3
P.0172A1-12-1	49.7 l	17.4 l	9.4 l	18.7 l	27.4 l	4.1 l	13.3	6	0
P.0175A1-37-4	63.3	23.6 l	15.7 l	27.7 l	36.9 l	7.0 l	4.5	5	0
P.04281A1-4-5	74.9 h	34.3	27.7	43.4 h	51.3 h	12.5	6.6	0	3
P.04287A1-16	66.5	34.0	26.3	48.3 h	51.3 h	11.4	30.5	0	2
P.03630A1-18	61.5 l	27.3 l	18.9 l	32.6 l	38.8 l	5.7 l	4.0	6	0
MO050600	60.6 l	33.8	24.3	43.3 h	44.9	4.7 l	8.0	2	1
MO050261	65.6	31.2	22.9	37.6	43.8	9.1 l	7.5	1	0
MO051150	75.0 h	31.3	25.2	42.5 h	52.3 h	8.9 l	20.3	1	3
MO050617	78.8 h	37.9	32.0	36.1	53.1 h	10.6	16.3	0	2
MO041020	66.7	24.3 l	20.1	28.5 l	43.5	9.3 l	4.0	3	0
MO050917	77.0 h	35.2	28.1	39.6	51.4 h	10.5	5.8	0	2
VA06W-553	65.1	29.7	16.9 l	21.5 l	36.5 l	4.6 l	5.3	4	0
VA06W-558	55.3 l	25.4 l	15.3 l	25.2 l	38.0 l	4.5 l	43.5	6	0
VA06W-561	59.7 l	20.7 l	16.8 l	33.8 l	43.0	6.4 l	28.8	5	0
VA06W-615	70.3 h	36.8	25.5	30.9 l	42.9	5.8 l	12.7	2	1
VA06W-622	70.6 h	24.1 l	23.0	44.9 h	50.2 h	15.5	25.2	1	3
TRIBUTE	63.9	29.5	23.8	42.1	49.8 h	8.5 l	30.0	1	1
BDLS. HONEY-6	75.5 h	46.5 h	39.4 h	42.8 h	59.9 h	10.8	60.7	0	5
SE98 1083-14	64.8	27.6 l	20.5	31.9 l	41.1 l	8.2 l	7.8	4	0
SEKY93 C-1699-14	70.9 h	35.0	28.0	38.8	48.1	11.7	70.3	0	1
SE94 C-0480-2-2	73.4 h	40.6 h	32.6	44.1 h	53.7 h	10.9	65.3	0	4
SE98 1106-6	71.1 h	35.8	27.2	21.1 l	39.9 l	10.5	6.3	2	1
SE94-1012-25	72.8 h	45.7 h	37.4 h	50.0 h	54.8 h	11.6	72.0	0	5
KY02C-3005-25	52.0 l	18.2 l	11.8 l	27.2 l	34.6 l	3.4 l	4.0	6	0
KY02C-3005-44	64.6	25.7 l	18.3 l	33.5 l	40.1 l	12.6	4.0	4	0
KY02C-3008-05	68.4	22.3 l	16.0 l	37.8	41.9	12.7	3.0	2	0
KY02C-3004-04	63.6	24.6 l	16.7 l	23.5 l	36.1 l	3.9 l	7.7	5	0
KY01C-1542-07	82.4 h	51.8 h	43.6 h	47.0 h	59.6 h	18.7	44.3	0	5
KY99C-1205-06-1	75.0 h	36.1	32.2	53.3 h	57.2 h	13.2	28.5	0	3
M04-4566	74.9 h	45.0 h	34.5 h	53.1 h	59.6 h	13.6	65.5	0	5
M04-4715	70.1 h	41.5 h	34.7 h	44.5 h	53.7 h	13.9	76.3	0	5
M05-1172	72.1 h	33.1	26.3	42.3 h	50.3 h	10.8	29.8	0	3
M05*1589	67.6	31.1	25.3	26.8 l	43.1	10.2 l	21.5	2	0
M05-1531	64.4	24.5 l	24.0	42.3 h	53.8 h	8.8 l	22.7	2	2
OH04-213-39	73.2 h	40.6 h	34.8 h	55.3 h	62.5 h	9.6 l	36.5	1	5
OH04-264-58	77.0 h	38.3	31.1	52.2 h	58.6 h	14.2	23.8	0	3
OH04-268-39	83.9 h	39.2	33.6	53.5 h	57.8 h	12.8	53.3	0	3
OH04-176-29	69.3	34.0	27.3	27.9 l	47.7	5.7 l	29.2	2	0
OH03-41-45	67.6	35.3	29.7	45.0 h	54.1 h	10.1 l	24.5	1	2
DH ACF112103 -8T	73.8 h	35.7	31.2	48.6 h	57.7 h	10.2 l	7.2	1	3
RCUOGF110202D/4	59.5 l	31.1	23.2	29.5 l	44.9	12.4	7.0	2	0
RCUOGDHACF1109O2D	58.3 l	32.4	23.7	48.3 h	52.0 h	10.7	4.5	1	2
RCATTF174/1C	74.0 h	37.3	29.3	45.9 h	52.2 h	15.3	4.0	0	3
RCATTF203/2	83.3 h	37.6	29.3	27.2 l	44.7	16.7	11.0	1	1
RCATL31	71.0 h	38.4	30.1	36.6	48.4	17.0	61.2	0	1
IL01-34159	45.9 l	16.2 l	10.6 l	20.9 l	27.7 l	2.3 l	3.7	6	0
IL79-002T-B-B	60.2 l	26.3 l	17.6 l	33.1 l	41.2 l	5.2 l	4.5	6	0
IL04-7874	65.9	30.0	21.9	29.5 l	41.1 l	7.4 l	19.8	3	0
IL04-8445	59.8 l	30.5	21.7	30.3 l	41.0 l	6.7 l	28.2	4	0
IL04-17204	60.4 l	33.2	21.2	25.7 l	39.8 l	9.2 l	30.5	4	0
AVERAGE	68.3	32.7	25.6	37.4	47.5	10.7	25.3		
MINUMUM	45.9	16.2	9.4	14.2	27.4	2.3	3.0		
MAXIMUM	85.8	51.8	43.6	62.0	62.7	27.5	98.8		
LSD(0.05)	15.6	12.3	9.9	19.8	14.0	7.9			
# Environments	7	6	8	4	4	4	1		

Table 10. Summary of the best (top of table) and worst (bottom of table) entries from the 2008 PNUWWSN

NAME	SEV	INC	IND	FDK	ISK	DON	GH	#l	#h
IL01-34159	45.9 l	16.2 l	10.6 l	20.9 l	27.7 l	2.3 l	3.7	6	0
KY02C-3005-25	52.0 l	18.2 l	11.8 l	27.2 l	34.6 l	3.4 l	4.0	6	0
P.0172A1-12-1	49.7 l	17.4 l	9.4 l	18.7 l	27.4 l	4.1 l	13.3	6	0
VA06W-558	55.3 l	25.4 l	15.3 l	25.2 l	38.0 l	4.5 l	43.5	6	0
IL79-002T-B-B	60.2 l	26.3 l	17.6 l	33.1 l	41.2 l	5.2 l	4.5	6	0
P.03630A1-18	61.5 l	27.3 l	18.9 l	32.6 l	38.8 l	5.7 l	4.0	6	0
KY02C-3004-04	63.6	24.6 l	16.7 l	23.5 l	36.1 l	3.9 l	7.7	5	0
VA06W-561	59.7 l	20.7 l	16.8 l	33.8 l	43.0	6.4 l	28.8	5	0
P.0175A1-37-4	63.3	23.6 l	15.7 l	27.7 l	36.9 l	7.0 l	4.5	5	0
VA06W-553	65.1	29.7	16.9 l	21.5 l	36.5 l	4.6 l	5.3	4	0
IL04-8445	59.8 l	30.5	21.7	30.3 l	41.0 l	6.7 l	28.2	4	0
SE98 1083-14	64.8	27.6 l	20.5	31.9 l	41.1 l	8.2 l	7.8	4	0
IL04-17204	60.4 l	33.2	21.2	25.7 l	39.8 l	9.2 l	30.5	4	0
MSU Line E6042	50.8 l	30.2	20.7	14.2 l	34.7 l	9.3 l	49.7	4	0
TRUMAN	58.4 l	18.0 l	17.2 l	25.1 l	42.4	10.6	6.4	4	0
ERNIE	57.9 l	24.2 l	18.5 l	25.5 l	41.7	11.5	10.5	4	0
KY02C-3005-44	64.6	25.7 l	18.3 l	33.5 l	40.1 l	12.6	4.0	4	0
SE94 C-0480-2-2	73.4 h	40.6 h	32.6	44.1 h	53.7 h	10.9	65.3	0	4
MSU Line E2043	84.5 h	39.1	33.2	62.0 h	60.0 h	22.9 h	10.5	0	4
OH04-213-39	73.2 h	40.6 h	34.8 h	55.3 h	62.5 h	9.6 l	36.5	1	5
BDLS. HONEY-6	75.5 h	46.5 h	39.4 h	42.8 h	59.9 h	10.8	60.7	0	5
SE94-1012-25	72.8 h	45.7 h	37.4 h	50.0 h	54.8 h	11.6	72.0	0	5
M04-4566	74.9 h	45.0 h	34.5 h	53.1 h	59.6 h	13.6	65.5	0	5
M04-4715	70.1 h	41.5 h	34.7 h	44.5 h	53.7 h	13.9	76.3	0	5
KY01C-1542-07	82.4 h	51.8 h	43.6 h	47.0 h	59.6 h	18.7	44.3	0	5
PIONEER 2545	85.8 h	46.6 h	42.5 h	57.9 h	62.7 h	21.7 h	98.8	0	6
MSU Line E6059	85.5 h	40.6 h	33.8 h	47.8 h	56.9 h	27.5 h	24.8	0	6
AVERAGE	68.3	32.7	25.6	37.4	47.5	10.7	30.0		
MINUMUM	45.9	16.2	9.4	14.2	27.4	2.3	3.7		
MAXIMUM	85.8	51.8	43.6	62.0	62.7	27.5	98.8		
LSD(0.05)	15.6	12.3	9.9	19.8	14.0	7.9			
# Environments	7	6	8	4	4	4	1		

Table 11. Mean incidence (INC, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG		ILURB	KYLEX	MDSAL	MIELA	MOCOL	NEMEA	NYITH	OHWOO	ONRID	VABLA
1	ERNIE	31.7		46.6	31.7	50.0	17.9	46.2	11.7	17.3	31.7	26.7	37.5
2	TRUMAN	21.6	l	17.9	31.1	15.0	11.3	20.1	9.3	2.0	71.7	22.7	15.0
3	FREEDOM	34.9		30.4	53.9	30.0	25.5	42.5	7.7	8.3	91.7	38.7	20.0
4	PIONEER 2545	52.2	h	68.4	75.5	55.0	42.7	48.2	10.7	28.8	96.7	60.7	35.0
5	MSU Line E6002	30.7		45.5	22.9	45.0	46.6	37.8	9.3	7.8	33.3	29.0	30.0
6	MSU Line E6001	35.1		62.4	51.4	40.0	29.4	18.7	9.7	14.8	26.7	50.0	47.5
7	MSU Line E6003	17.6	l	9.3	10.5	10.0	6.1	28.9	18.0	6.3	28.3	21.0	37.5
8	MSU Line E5011	45.1		66.9	50.8	20.0	49.1	53.8	19.7	11.5	80.0	68.7	30.0
9	P.99600A2-4-93	38.1		46.1	60.3	40.0	26.0	44.7	9.0	11.0	56.7	44.3	42.5
10	P.0179A1-17	36.3		51.2	27.4	25.0	28.2	40.3	9.7	9.8	86.7	49.7	35.0
11	P.011010A1-15	40.7		60.1	57.8	40.0	25.4	42.7	11.7	12.5	71.7	74.7	10.0
12	P.03112A1-7-3	34.3		36.7	36.3	20.0	48.6	29.9	14.7	8.3	90.0	38.7	20.0
13	KS980512-2-2	40.2		50.4	63.9	40.0	45.4	31.4	8.7	27.8	60.0	44.3	30.0
14	KS05HW14-3	39.3		64.5	29.8	40.0	36.4	37.6	13.0	8.8	73.3	50.0	40.0
15	MO050143	28.7		30.7	13.6	30.0	15.4	45.7	9.0	5.5	65.0	55.0	17.5
16	MO050699	35.5		41.8	26.4	20.0	27.6	37.6	8.7	8.5	86.7	55.3	42.5
17	MO050921	24.1	l	27.2	18.9	20.0	23.3	24.6	7.7	3.0	58.3	33.0	25.0
18	MO050101	27.3		36.6	16.1	30.0	16.6	37.3	11.3	5.8	46.7	50.0	22.5
19	VA05W-425	33.1		33.6	34.7	25.0	25.1	37.2	12.3	14.0	53.3	38.7	57.5
20	VA05W-775	28.8		16.5	37.2	25.0	14.4	28.6	7.0	4.3	66.7	38.7	50.0
21	VA05W-777	28.1		32.5	25.1	15.0	18.4	34.3	7.3	12.0	73.3	33.0	30.0
22	VA05W-534	24.9	l	39.3	24.0	30.0	15.3	28.2	7.7	23.8	18.3	22.7	40.0
23	MD01W233-06-1	26.1		43.5	26.4	30.0	13.2	30.1	7.7	9.0	60.0	29.0	12.5
24	MD01W233-06-16	28.5		50.4	36.4	30.0	17.8	27.3	14.0	12.0	43.3	38.7	15.0
25	MD99W483-06-11	38.8		58.7	11.3	45.0	34.3	54.1	17.7	23.0	76.7	34.7	32.5
26	NYCalresel-L	40.2		63.2	38.9	30.0	33.9	61.9	7.0	6.8	73.3	49.7	37.5
27	NY94052-9340	31.7		45.2	39.5	10.0	28.0	36.5	11.0	14.8	68.3	38.7	25.0
28	NYW103-1-9100	37.0		53.4	45.0	10.0	44.1	37.0	15.7	7.0	80.0	55.3	22.5
29	NYW103-70-9232	42.3		64.7	44.2	20.0	46.0	38.7	23.7	8.0	85.0	74.7	17.5
30	NY93246SP-9070	34.9		50.4	50.6	20.0	50.1	31.5	9.7	5.0	72.5	38.7	20.0
31	SE911492-4	33.2		39.8	23.8	25.0	21.3	41.5	12.0	14.3	70.0	59.7	25.0
32	SE89-1873-2	39.4		52.2	52.0	30.0	37.6	47.4	13.0	17.8	55.0	68.7	20.0
33	SE98-1089-34	60.7	h	75.2	89.3	45.0	58.9	56.4	18.0	45.5	95.0	86.3	37.5
34	SE93-1094-8	39.9		69.2	41.3	35.0	32.8	34.9	19.3	26.8	70.0	50.0	20.0
35	NE05418	26.3		40.6	19.5	55.0	21.7	28.7	8.0	0.0	47.5	29.0	12.5
36	NE05549	46.6		73.9	54.2	35.0	49.9	38.0	7.7	20.8	93.3	66.0	27.5
37	NE05537	36.7		46.7	28.0	45.0	33.1	21.8	8.3	7.0	88.3	38.7	50.0
38	NE03488	33.7		54.2	20.3	45.0	57.6	33.7	8.7	3.0	43.3	29.0	42.5
39	NE01643	37.7		36.6	59.3	25.0	40.9	45.7	8.0	8.3	76.7	44.3	32.5
40	KY00C-2059-16	36.6		48.8	36.4	25.0	46.4	41.8	7.7	12.8	81.7	50.0	15.0
41	KY00C-2143-08	32.8		45.5	21.5	30.0	20.1	37.9	9.7	18.3	78.3	29.0	37.5
42	KY00C-2755-03	39.0		54.0	79.4	25.0	36.9	34.9	11.7	13.3	76.7	33.0	25.0
43	KY97C-0321-05-2	46.7		70.3	78.9	30.0	43.7	44.5	12.0	14.3	95.0	60.7	17.5
44	M04*5109	33.5		50.5	30.5	45.0	21.4	41.7	7.7	18.3	53.3	38.7	27.5
45	M04-4802	41.0		63.0	30.9	40.0	35.0	40.3	10.7	25.8	81.7	55.0	27.5
46	M03-3616-B11	26.6		27.0	39.6	20.0	13.6	43.5	11.0	9.5	45.0	34.7	22.5
47	M03-3616-C10	25.4	l	32.7	19.1	30.0	12.9	24.6	10.0	24.3	43.3	44.3	12.5
48	OH02-13567	28.7		34.8	36.2	30.0	17.8	35.6	8.3	34.0	33.3	44.3	12.5
49	OH03-235-2	40.7		47.1	75.1	20.0	28.5	46.2	10.0	19.0	91.7	44.0	25.0
50	OH02-12678	27.0		47.2	32.6	12.5	16.1	40.1	8.0	4.5	55.0	38.7	15.0
51	OH02-7217	28.3		42.4	46.3	15.0	16.9	30.7	10.0	4.5	61.7	33.0	22.5
52	DH 22/8	36.8		72.2	29.1	65.0	31.4	44.5	7.7	5.5	23.3	44.3	45.0
53	DH 22/24	19.5	l	10.3	16.8	40.0	5.1	11.0	8.0	3.0	23.3	22.7	55.0
54	DH 19/176B	42.4		62.2	62.3	20.0	31.8	32.4	18.3	8.0	90.0	58.7	40.0
55	DH F/SF, 23	50.1	h	69.4	49.4	55.0	56.2	34.2	25.3	27.3	71.7	65.0	47.5
56	IL02-18228	15.3	l	24.6	13.5	10.0	11.9	16.5	9.0	4.5	25.0	25.0	12.5
57	IL02-19463	31.9		56.8	8.4	45.0	16.5	31.0	9.0	21.0	71.7	25.0	35.0
58	IL04-10118	24.7	l	40.1	20.8	35.0	14.9	30.4	9.7	9.0	48.3	29.0	10.0
59	IL04-10721	28.1		41.0	23.4	35.0	15.6	28.8	9.3	7.0	53.3	33.0	35.0
60	IL04-10741	24.1	l	40.2	18.9	35.0	17.9	27.8	8.3	7.5	41.7	29.0	15.0
	AVERAGE	34.0		46.9	37.5	31.0	28.8	36.3	11.1	12.9	63.5	43.6	28.7
	MINUMUM	15.3		9.3	8.4	10.0	5.1	11.0	7.0	0.0	18.3	21.0	10.0
	MAXIMUM	60.7		75.2	89.3	65.0	58.9	61.9	25.3	45.5	96.7	86.3	57.5
	LSD(0.05)	10.6		.	.	.	.	.	.	.	.	.	.

Table 12. Mean field severity (SEV, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG		ILURB	INLAF	KYLEX	MDSAL	MIELA	MOCOL	NEMEA	NYITH	OHWOO	ONRID	VABLA
1	ERNIE	57.4		88.3	37.5	75.0	60.0	68.1	100.0	86.7	10.0	21.6	56.7	27.5
2	TRUMAN	47.4	l	63.3	27.5	100.0	10.0	48.6	97.5	60.0	6.3	13.4	60.0	35.0
3	FREEDOM	57.4		96.7	34.4	100.0	25.0	95.0	100.0	56.7	7.5	18.0	53.3	45.0
4	PIONEER 2545	74.9	h	98.3	88.9	100.0	45.0	91.7	100.0	93.3	15.0	47.0	80.0	65.0
5	MSU Line E6002	55.2		90.0	21.1	50.0	45.0	78.3	97.5	80.0	7.5	29.5	63.3	45.0
6	MSU Line E6001	61.2		100.0	20.5	75.0	35.0	92.2	97.5	70.0	47.5	21.3	76.7	37.5
7	MSU Line E6003	48.5	l	90.0	20.5	75.0	10.0	78.8	95.0	43.3	11.3	8.2	36.7	65.0
8	MSU Line E5011	68.1	h	100.0	64.1	100.0	15.0	94.6	100.0	83.3	21.3	55.5	80.0	35.0
9	P.99600A2-4-93	66.6	h	93.3	84.0	85.0	45.0	88.4	100.0	70.0	12.5	35.6	73.3	45.0
10	P.0179A1-17	63.6		100.0	56.0	80.0	35.0	88.7	100.0	100.0	17.5	24.5	73.3	25.0
11	P.011010A1-15	67.2	h	96.7	46.5	100.0	55.0	91.3	100.0	90.0	36.3	22.9	83.3	17.5
12	P.03112A1-7-3	60.7		100.0	28.0	100.0	15.0	88.1	100.0	83.3	23.8	19.8	70.0	40.0
13	KS980512-2-2	60.9		95.0	64.4	100.0	30.0	91.4	97.5	53.3	8.8	21.9	70.0	37.5
14	KS05HW14-3	71.9	h	98.3	89.0	70.0	35.0	94.8	97.5	90.0	28.8	32.8	80.0	75.0
15	MO050143	52.6	l	75.0	31.0	70.0	15.0	82.1	97.5	66.7	7.5	20.4	83.3	30.0
16	MO050699	61.1		88.3	33.0	85.0	35.0	87.9	92.5	60.0	10.0	28.3	76.7	75.0
17	MO050921	49.6	l	66.7	17.5	65.0	15.0	71.5	77.5	40.0	3.8	20.2	83.3	85.0
18	MO050101	49.9	l	73.3	50.6	50.0	20.0	72.5	97.5	63.3	8.8	13.3	80.0	20.0
19	VA05W-425	60.0		81.7	54.5	60.0	30.0	85.3	97.5	93.3	22.5	9.3	83.3	42.5
20	VA05W-775	55.4		73.3	24.0	100.0	40.0	84.4	97.5	43.3	6.3	10.3	80.0	50.0
21	VA05W-777	57.2		80.0	34.4	90.0	35.0	88.2	97.5	40.0	15.0	15.4	83.3	50.0
22	VA05W-534	52.6	l	81.7	49.0	95.0	25.0	74.8	97.5	56.7	10.0	9.2	60.0	20.0
23	MD01W233-06-1	53.5	l	96.7	26.7	85.0	50.0	78.1	100.0	50.0	7.5	10.6	66.7	17.5
24	MD01W233-06-16	56.6		100.0	38.8	40.0	45.0	84.8	100.0	80.0	8.8	10.3	80.0	35.0
25	MD99W483-06-11	63.3		100.0	89.5	25.0	45.0	72.2	100.0	86.7	31.3	35.2	76.7	35.0
26	NYCalresel-L	60.0		95.0	91.3	95.0	20.0	89.0	100.0	26.7	3.8	42.9	73.3	22.5
27	NY94052-9340	59.1		96.7	49.4	100.0	10.0	74.9	97.5	53.3	11.3	36.9	70.0	50.0
28	NYW103-1-9100	61.6		98.3	71.9	85.0	10.0	74.6	100.0	60.0	3.8	63.6	70.0	40.0
29	NYW103-70-9232	66.0	h	98.3	82.5	85.0	15.0	81.6	97.5	76.7	3.8	60.3	80.0	45.0
30	NY93246SP-9070	61.9		98.3	37.0	85.0	25.0	87.6	100.0	56.7	6.3	44.7	80.0	60.0
31	SE911492-4	64.1		83.3	37.5	80.0	50.0	85.6	97.5	93.3	21.3	40.4	76.7	40.0
32	SE89-1873-2	65.5		90.0	96.0	80.0	25.0	88.3	97.5	73.3	21.3	29.0	80.0	40.0
33	SE98-1089-34	78.5	h	100.0	87.0	100.0	35.0	94.9	100.0	80.0	48.8	66.2	86.7	65.0
34	SE93-1094-8	67.2	h	100.0	51.1	80.0	55.0	95.3	100.0	80.0	36.3	29.3	76.7	35.0
35	NE05418	52.0	l	80.0	36.0	45.0	35.0	85.1	97.5	76.7	0.0	26.9	70.0	20.0
36	NE05549	68.2	h	100.0	72.1	100.0	30.0	95.3	100.0	50.0	15.0	52.7	80.0	55.0
37	NE05537	54.8		96.7	39.4	50.0	25.0	95.0	95.0	56.7	7.5	33.7	53.3	50.0
38	NE03488	62.5		93.3	100.0	30.0	35.0	81.7	100.0	70.0	6.3	47.5	73.3	50.0
39	NE01643	66.4	h	100.0	100.0	100.0	15.0	95.2	100.0	30.0	6.3	32.6	86.7	65.0
40	KY00C-2059-16	58.0		93.3	59.0	50.0	20.0	88.1	100.0	63.3	5.0	19.8	80.0	60.0
41	KY00C-2143-08	59.2		95.0	28.0	50.0	60.0	91.4	97.5	70.0	33.8	23.2	80.0	22.5
42	KY00C-2755-03	61.2		95.0	53.6	95.0	25.0	88.5	95.0	60.0	15.0	26.9	76.7	42.5
43	KY97C-0321-05-2	67.2	h	100.0	52.5	100.0	15.0	94.5	100.0	50.0	3.8	64.0	81.7	77.5
44	M04*5109	59.5		96.7	25.6	90.0	40.0	94.9	100.0	43.3	7.5	24.3	86.7	45.0
45	M04-4802	65.5		100.0	51.1	80.0	45.0	88.6	100.0	80.0	15.0	33.2	80.0	47.5
46	M03-3616-B11	53.4	l	75.0	20.0	100.0	25.0	71.4	100.0	63.3	7.5	20.7	80.0	25.0
47	M03-3616-C10	51.9	l	61.7	21.0	85.0	25.0	75.3	97.5	83.3	5.0	22.2	80.0	15.0
48	OH02-13567	54.1	l	78.3	25.0	80.0	45.0	81.4	97.5	76.7	7.5	14.1	70.0	20.0
49	OH03-235-2	59.0		100.0	18.9	100.0	25.0	88.5	100.0	63.3	6.3	27.5	80.0	40.0
50	OH02-12678	54.4	l	90.0	36.1	100.0	35.0	68.3	100.0	50.0	3.8	27.0	73.3	15.0
51	OH02-7217	59.4		80.0	47.1	100.0	20.0	84.8	95.0	66.7	5.0	13.4	86.7	55.0
52	DH 22/8	58.4		100.0	72.5	65.0	60.0	77.7	97.5	40.0	3.8	22.1	83.3	20.0
53	DH 22/24	42.4	l	53.3	7.5	40.0	50.0	20.8	90.0	76.7	6.3	16.3	40.0	65.0
54	DH 19/176B	67.4	h	100.0	61.1	100.0	20.0	91.6	100.0	63.3	3.8	38.7	83.3	80.0
55	DH F/SF, 23	64.7		100.0	67.2	65.0	35.0	88.1	100.0	83.3	16.3	39.5	80.0	37.5
56	IL02-18228	41.9	l	60.0	24.0	75.0	20.0	45.1	90.0	50.0	5.0	16.5	63.3	12.5
57	IL02-19463	57.4		95.0	84.5	15.0	60.0	85.1	95.0	70.0	16.3	23.8	66.7	20.0
58	IL04-10118	55.9		68.3	82.0	90.0	30.0	48.8	97.5	70.0	15.0	28.7	70.0	15.0
59	IL04-10721	61.1		83.3	65.0	60.0	60.0	68.5	95.0	83.3	10.0	17.4	76.7	52.5
60	IL04-10741	48.7	l	73.3	18.1	35.0	50.0	65.1	95.0	63.3	11.3	28.5	73.3	22.5
	AVERAGE	59.4		89.2	50.0	77.8	32.8	81.7	97.7	66.6	13.0	28.5	74.3	41.4
	MINUMUM	41.9		53.3	7.5	15.0	10.0	20.8	77.5	26.7	0.0	8.2	36.7	12.5
	MAXIMUM	78.5		100.0	100.0	100.0	60.0	95.3	100.0	100.0	48.8	66.2	86.7	85.0
	LSD(0.05)	12.8		.	.	.	.	.	.	.	.	.	.	.

Table 13. Mean index (IND, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG		ILURB	KSMAN	KYLEX	MDSAL	MIELA	MOCOL	NEMEA	NYITH	OHWOO	ONRID	ROMAN	VABLA
1	ERNIE	22.7		41.3	41.9	23.8	30.0	12.5	46.2	10.0	1.7	7.2	16.8	31.6	9.9
2	TRUMAN	14.5	l	11.3	22.8	31.1	1.5	5.4	19.5	5.0	0.1	9.8	14.0	48.3	5.0
3	FREEDOM	23.1		29.3	40.8	53.9	7.0	24.2	42.5	4.7	0.6	16.4	21.6	27.4	8.5
4	PIONEER 2545	42.8		67.1	67.1	75.5	26.0	39.6	48.2	10.0	4.3	45.4	48.0	58.4	24.0
5	MSU Line E6002	25.6		41.0	44.8	11.5	21.0	36.6	36.9	7.3	0.6	10.6	18.9	63.3	14.5
6	MSU Line E6001	25.7		62.4	55.8	38.5	14.5	27.2	18.3	6.3	7.0	5.9	38.3	16.7	17.6
7	MSU Line E6003	10.5	l	8.4	9.2	7.9	1.0	4.8	27.4	8.7	0.7	2.1	7.7	29.6	18.3
8	MSU Line E5011	40.2		66.9	52.9	50.8	3.0	46.6	53.8	15.0	2.4	44.4	54.9	81.7	10.5
9	P.99600A2-4-93	33.0		43.4	52.4	51.3	18.0	23.2	44.7	6.3	1.4	20.0	32.7	70.1	32.3
10	P.0179A1-17	26.3		51.2	59.1	21.9	9.0	25.0	40.3	9.7	1.7	21.3	36.4	29.8	10.0
11	P.011010A1-15	33.8		58.1	64.8	57.8	21.0	23.3	42.7	10.3	4.5	16.3	62.4	43.1	1.6
12	P.03112A1-7-3	22.6		36.7	32.4	36.3	3.0	45.4	29.9	11.3	2.0	17.8	26.5	22.0	8.0
13	KS980512-2-2	27.9		47.8	42.6	63.9	12.0	41.4	30.6	4.7	2.4	13.2	31.0	33.9	11.8
14	KS05HW14-3	34.1		63.4	57.5	20.9	17.0	34.5	36.6	11.7	2.5	24.0	40.0	66.1	34.5
15	MO050143	19.4	l	23.3	38.3	9.5	5.5	12.8	44.6	6.7	0.4	13.3	46.2	26.1	6.5
16	MO050699	25.9		36.5	52.4	22.4	7.0	24.5	34.7	5.3	0.9	24.7	42.6	26.2	33.8
17	MO050921	16.4	l	18.1	24.7	12.3	3.5	17.2	19.1	3.3	0.1	10.8	27.5	36.8	23.5
18	MO050101	19.5		27.7	38.9	8.0	6.0	12.1	36.3	8.0	0.5	6.3	40.0	43.7	6.3
19	VA05W-425	23.4		28.5	45.4	20.8	8.0	21.1	36.3	11.3	3.2	4.8	32.0	45.0	23.9
20	VA05W-775	17.7	l	12.1	30.5	37.2	10.5	12.4	27.8	3.0	0.3	6.8	30.9	18.3	23.0
21	VA05W-777	18.5	l	26.0	35.1	22.6	5.0	16.1	33.4	3.0	1.8	11.0	27.5	23.6	17.0
22	VA05W-534	17.0	l	32.0	40.8	22.8	8.0	11.5	27.5	4.7	2.4	1.9	14.0	27.1	11.0
23	MD01W233-06-1	18.8	l	42.0	36.9	22.5	14.0	10.0	30.1	4.0	0.7	6.4	19.6	36.4	2.4
24	MD01W233-06-16	20.3		50.4	32.4	14.6	13.5	15.0	27.3	12.7	1.1	4.4	30.4	33.4	7.8
25	MD99W483-06-11	27.9		58.7	50.2	2.8	22.5	24.7	54.1	15.7	7.2	27.6	26.6	33.2	11.3
26	NYCalresel-L	33.1		60.2	49.4	36.9	8.0	29.7	61.9	1.7	0.3	31.6	35.9	72.9	8.1
27	NY94052-9340	26.2		43.7	40.6	39.5	1.0	20.9	35.6	7.7	1.7	26.9	26.5	56.8	13.0
28	NYW103-1-9100	33.1		52.6	31.0	38.2	1.0	33.7	37.0	11.7	0.3	51.1	38.7	91.5	10.3
29	NYW103-70-9232	38.1		63.6	45.1	37.6	3.0	37.6	37.8	17.3	0.3	51.3	59.7	94.2	9.8
30	NY93246SP-9070	32.7		49.6	52.3	43.0	5.0	43.9	31.5	6.0	0.3	32.5	31.5	82.5	14.0
31	SE911492-4	25.5		33.7	33.9	19.1	13.0	18.2	40.4	10.7	3.0	31.1	46.1	45.6	11.0
32	SE89-1873-2	31.9		47.4	57.3	41.6	9.0	33.2	46.2	11.0	3.8	12.6	54.9	57.3	9.0
33	SE98-1089-34	52.1	h	75.2	66.4	89.3	18.0	55.9	56.4	16.7	22.2	63.3	75.1	62.7	23.8
34	SE93-1094-8	32.8		69.2	65.2	33.1	20.0	31.3	34.9	16.0	9.7	26.5	38.3	40.7	8.5
35	NE05418	19.7		32.4	46.4	8.8	18.5	18.4	28.0	6.0	0.0	12.4	19.9	42.8	3.3
36	NE05549	41.0		73.9	67.7	54.2	10.5	47.4	38.0	3.7	3.1	49.2	52.8	74.4	17.0
37	NE05537	24.7		45.1	37.4	14.0	11.5	31.7	20.7	4.7	0.5	29.8	21.6	54.2	25.0
38	NE03488	27.3		50.7	40.7	6.1	16.5	46.8	33.7	6.0	0.2	21.2	21.0	60.1	25.0
39	NE01643	34.0		36.6	51.3	59.3	3.5	38.8	45.7	3.0	0.5	24.7	38.2	84.3	22.0
40	KY00C-2059-16	24.8		45.7	49.9	18.2	5.0	40.5	41.8	5.0	0.6	16.3	40.0	24.7	10.0
41	KY00C-2143-08	21.2		43.0	43.3	10.7	18.0	18.4	36.9	7.0	6.2	18.3	23.2	21.3	7.9
42	KY00C-2755-03	30.1		51.2	46.3	75.4	6.5	32.8	33.2	7.7	2.0	20.7	25.3	50.1	10.5
43	KY97C-0321-05-2	41.6		70.3	54.1	78.9	5.5	41.4	44.5	7.3	0.5	61.7	50.2	68.7	15.8
44	M04*5109	26.6		49.0	50.9	27.4	18.0	20.4	41.7	3.3	1.4	13.0	33.7	46.6	13.5
45	M04-4802	32.8		63.0	56.9	24.7	18.0	31.0	40.3	9.0	3.9	27.0	42.9	63.8	13.4
46	M03-3616-B11	19.3	l	20.3	28.6	39.6	5.0	10.1	43.5	7.3	0.7	9.8	27.7	31.9	6.5
47	M03-3616-C10	17.3	l	20.4	39.4	16.2	7.5	9.7	23.9	8.7	1.2	9.8	35.5	33.4	2.3
48	OH02-13567	18.3	l	27.3	28.4	29.0	14.0	15.1	34.7	6.7	2.6	4.6	31.0	23.4	2.5
49	OH03-235-2	31.4		47.1	39.9	75.1	5.0	25.2	46.2	7.0	1.2	25.7	34.1	59.8	10.5
50	OH02-12678	20.3		42.0	33.4	32.6	4.5	11.5	40.1	4.3	0.2	15.0	28.2	29.2	2.5
51	OH02-7217	21.2		32.8	28.3	46.3	3.0	13.9	29.1	6.7	0.2	9.2	28.6	42.9	13.5
52	DH 22/8	28.5		72.2	44.8	18.9	42.0	24.7	43.4	3.3	0.2	4.0	36.6	39.0	12.5
53	DH 22/24	12.5	l	5.3	33.3	6.7	20.0	1.4	9.9	6.3	0.2	4.2	9.3	16.5	36.5
54	DH 19/176B	36.1		62.2	44.6	62.3	4.0	29.0	32.4	12.7	0.3	35.9	48.8	65.5	36.0
55	DH F/SF, 23	39.1		69.4	63.3	32.1	21.5	49.6	34.2	23.7	4.4	32.4	52.4	69.2	17.3
56	IL02-18228	13.0	l	14.5	44.4	10.2	2.0	5.7	14.8	5.0	0.2	3.4	15.3	38.7	2.1
57	IL02-19463	22.0		54.0	53.6	1.3	27.5	13.9	29.4	7.0	3.4	17.3	16.4	33.1	7.0
58	IL04-10118	18.9	l	27.5	36.9	18.7	10.0	7.4	29.7	7.3	1.4	15.1	20.3	50.3	2.0
59	IL04-10721	21.0		34.0	43.8	14.0	21.0	11.5	27.4	7.7	0.7	10.7	25.3	30.8	25.3
60	IL04-10741	18.9	l	29.4	44.1	6.6	20.5	11.6	26.4	5.3	0.8	11.5	21.4	45.3	3.8
	AVERAGE	26.2		43.3	44.4	31.8	11.7	24.7	35.7	8.0	2.1	20.0	33.2	46.3	13.7
	MINUMUM	10.5		5.3	9.2	1.3	1.0	1.4	9.9	1.7	0.0	1.9	7.7	16.5	1.6
	MAXIMUM	52.1		75.2	67.7	89.3	42.0	55.9	61.9	23.7	22.2	63.3	75.1	94.2	36.5
	LSD(0.05)	9.0													

Table 14. Mean Fusarium damaged kernels (FDK, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG		ILURB	KSMAN	KYLEX	MDSAL	MOCOL	ROMAN
1	ERNIE	28.5	h	33.0	15.0	25.1	15.0	40.0	43.0
2	TRUMAN	16.6	l	12.0	2.5	16.7	3.5	20.0	44.6
3	FREEDOM	19.5	l	43.0	4.8	19.4	9.5	25.0	15.0
4	PIO2545	36.3	h	73.0	9.3	49.0	17.0	5.0	64.5
5	MSULineE6002	28.4	h	30.0	9.5	15.4	14.0	40.0	61.7
6	MSULineE6001	26.0	l	70.0	6.5	15.3	16.5	20.0	27.6
7	MSULineE6003	11.5	l	15.0	4.3	2.9	3.5	20.0	23.4
8	MSULineE5011	32.2	h	70.0	5.3	26.6	8.5	20.0	62.8
9	P.99600A2-4-93	33.9	h	53.0	5.3	30.4	19.0	25.0	70.6
10	P.0179A1-17	30.4	h	47.0	4.8	20.7	13.5	65.0	31.3
11	P.011010A1-15	23.6	l	37.0	10.3	27.5	18.5	20.0	28.4
12	P.03112A1-7-3	24.5	l	27.0	2.3	13.8	14.5	50.0	39.6
13	KS980512-2-2	22.4	l	53.0	6.3	13.6	9.5	25.0	26.8
14	KS05HW14-3	32.5	h	57.0	11.5	15.3	21.0	40.0	50.0
15	MO050143	17.3	l	27.0	3.5	13.7	3.5	10.0	45.8
16	MO050699	26.5		37.0	4.3	15.2	6.5	50.0	46.1
17	MO050921	16.0	l	27.0	5.0	8.1	7.0	20.0	28.6
18	MO050101	16.9	l	18.0	3.3	23.5	5.5	20.0	31.2
19	VA05W-425	24.3	l	22.0	4.8	14.9	8.0	65.0	31.2
20	VA05W-775	22.5	l	12.0	3.3	9.6	14.5	60.0	35.5
21	VA05W-777	20.7	l	18.0	5.3	10.9	10.5	40.0	39.5
22	VA05W-534	17.5	l	23.0	5.0	9.4	2.5	30.0	34.8
23	MD01W233-06-1	21.4	l	23.0	3.5	12.9	7.5	50.0	31.4
24	MD01W233-06-16	22.3	l	40.0	3.8	13.9	11.5	30.0	34.7
25	MD99W483-06-11	34.3	h	70.0	7.5	8.3	22.0	60.0	37.7
26	NYCalresel-L	37.5	h	70.0	7.5	35.5	3.0	50.0	58.9
27	NY94052-9340	28.4	h	63.0	9.8	17.2	5.5	25.0	50.0
28	NYW103-1-9100	22.3	l	60.0	3.5	11.6	4.0	5.0	49.7
29	NYW103-70-9232	28.0		67.0	3.5	16.4	5.5	20.0	55.6
30	NY93246SP-9070	32.7	h	57.0	5.8	21.6	6.0	55.0	50.6
31	SE911492-4	24.4	l	37.0	4.8	15.8	9.0	50.0	29.9
32	SE89-1873-2	27.0		53.0	5.3	27.0	7.5	25.0	44.3
33	SE98-1089-34	39.2	h	92.0	9.3	54.0	19.0	20.0	40.7
34	SE93-1094-8	36.1	h	80.0	9.5	40.7	23.5	5.0	57.9
35	NE05418	26.0	l	28.0	8.5	9.1	12.0	65.0	33.3
36	NE05549	28.3	h	70.0	5.3	18.4	19.0	3.0	53.8
37	NE05537	22.6	l	53.0	3.0	17.6	8.0	30.0	24.0
38	NE03488	22.9	l	57.0	5.3	13.8	19.5	25.0	17.0
39	NE01643	28.1	h	43.0	5.3	12.7	15.0	25.0	67.7
40	KY00C-2059-16	22.4	l	47.0	9.8	7.9	15.5	25.0	28.9
41	KY00C-2143-08	18.8	l	40.0	7.0	8.5	10.5	25.0	21.6
42	KY00C-2755-03	24.7	l	53.0	6.8	12.9	7.0	40.0	28.3
43	KY97C-0321-05-2	34.5	h	73.0	6.0	34.5	11.0	55.0	27.2
44	M04*5109	29.5	h	43.0	6.8	28.1	11.5	40.0	47.6
45	M04-4802	32.6	h	70.0	5.0	32.2	14.5	40.0	33.9
46	M03-3616-B11	18.3	l	28.0	4.8	22.7	14.5	25.0	14.8
47	M03-3616-C10	26.8		28.0	13.0	16.8	14.0	50.0	39.0
48	OH02-13567	23.6	l	30.0	20.5	16.1	7.5	40.0	27.7
49	OH03-235-2	28.3	h	60.0	4.5	26.8	11.5	20.0	47.0
50	OH02-12678	17.0	l	43.0	5.8	19.9	7.5	5.0	20.7
51	OH02-7217	17.7	l	22.0	7.3	21.7	5.5	25.0	24.5
52	DH22/8	30.6	h	50.0	3.0	20.9	10.5	25.0	73.9
53	DH22/24	18.1	l	15.0	2.3	12.7	15.0	40.0	23.6
54	DH19/176B	28.4	h	53.0	6.8	36.7	6.5	15.0	52.4
55	DHF/SF,23	43.1	h	92.0	11.5	50.8	13.5	20.0	70.5
56	IL02-18228	14.4	l	10.0	4.5	7.0	2.0	30.0	33.1
57	IL02-19463	12.9	l	32.0	9.3	7.1	10.5	5.0	13.5
58	IL04-10118	18.6	l	30.0	4.3	11.6	3.5	3.0	59.1
59	IL04-10721	16.8	l	22.0	7.0	12.2	4.0	30.0	25.5
60	IL04-10741	22.6	l	22.0	4.0	12.7	9.5	60.0	27.1
	AVERAGE	25.1		43.8	6.4	19.4	10.7	31.2	39.3
	MINUMUM	11.5		10.0	2.3	2.9	2.0	3.0	13.5
	MAXIMUM	43.1		92.0	20.5	54.0	23.5	65.0	73.9
	LSD(0.05)	15.0		.	.	.	.	.	.

Table 15. Mean Incidence/Severity/Kernel index (ISK, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG	ILURB	KSMAN	KYLEX	MDSAL	MOCOL	ROMAN
1	ERNIE	43.7	53.8	31.2	42.0	39.0	59.9	36.2
2	TRUMAN	31.5 l	29.1	14.7	46.0	8.9	43.3	46.8
3	FREEDOM	38.5	55.5	26.4	53.9	20.3	52.7	22.4
4	PIO2545	56.6 h	79.4	44.0	72.3	36.8	46.5	60.8
5	MSULineE6002	43.9	52.7	30.7	28.0	32.6	56.6	62.7
6	MSULineE6001	41.7	76.8	36.1	44.0	29.1	42.9	21.1
7	MSULineE6003	24.9 l	35.8	7.2	26.8	7.4	45.2	27.1
8	MSULineE5011	51.7 h	78.1	33.8	55.9	13.9	54.1	74.1
9	P.99600A2-4-93	51.6 h	63.2	33.6	55.8	33.1	53.4	70.3
10	P.0179A1-17	44.0	64.0	37.3	40.5	23.4	68.1	30.4
11	P.011010A1-15	47.8 h	61.7	43.0	58.3	35.9	50.8	37.2
12	P.03112A1-7-3	37.1	51.7	20.3	46.4	16.3	59.0	29.0
13	KS980512-2-2	42.0	64.9	28.1	54.6	24.8	48.7	31.0
14	KS05HW14-3	48.9 h	71.5	39.1	36.0	30.9	56.5	59.6
15	MO050143	32.2 l	42.4	24.4	30.6	14.9	47.0	34.0
16	MO050699	39.8	53.7	33.1	39.5	19.1	59.0	34.2
17	MO050921	28.2 l	38.8	16.8	28.4	13.3	38.6	33.5
18	MO050101	33.1 l	40.3	24.7	29.2	17.2	48.4	38.7
19	VA05W-425	38.8	43.3	29.2	34.4	19.7	66.4	39.5
20	VA05W-775	34.7 l	31.6	19.6	45.0	25.3	61.8	25.2
21	VA05W-777	34.7 l	41.1	23.2	38.9	19.2	55.5	30.0
22	VA05W-534	34.8 l	45.6	26.5	39.5	17.5	49.7	30.2
23	MD01W233-06-1	39.0	51.4	23.6	38.6	27.0	59.0	34.4
24	MD01W233-06-16	37.0 l	61.1	21.0	28.5	27.1	50.2	33.9
25	MD99W483-06-11	44.0	75.6	33.1	14.2	35.8	70.2	35.0
26	NYCalresel-L	52.4 h	75.5	32.6	54.4	16.2	68.6	67.3
27	NY94052-9340	42.9	67.9	28.2	48.7	8.2	50.2	54.1
28	NYW103-1-9100	43.1	69.5	20.0	43.6	7.6	43.1	74.8
29	NYW103-70-9232	48.3 h	75.6	28.5	45.3	12.7	48.9	78.7
30	NY93246SP-9070	49.6 h	67.3	33.7	49.3	15.9	61.5	69.7
31	SE911492-4	39.8	51.6	22.3	37.5	26.1	61.7	39.3
32	SE89-1873-2	46.0	64.0	36.5	50.4	19.5	53.5	52.1
33	SE98-1089-34	58.6 h	89.2	43.6	78.4	31.6	54.9	53.9
34	SE93-1094-8	50.8 h	82.8	42.9	52.7	36.4	42.5	47.6
35	NE05418	39.4	47.5	31.2	23.0	31.8	63.9	39.0
36	NE05549	52.1 h	80.2	42.7	53.6	27.1	42.6	66.2
37	NE05537	38.7	64.4	23.7	30.5	24.2	47.0	42.1
38	NE03488	39.8	67.0	26.5	20.6	31.8	50.1	42.8
39	NE01643	48.9 h	58.3	32.9	52.9	18.0	53.7	77.7
40	KY00C-2059-16	37.2	61.3	33.9	29.1	19.7	52.5	26.4
41	KY00C-2143-08	35.8 l	58.1	28.8	24.9	31.2	50.6	21.4
42	KY00C-2755-03	44.7	66.0	30.5	57.5	17.8	55.0	41.4
43	KY97C-0321-05-2	53.0 h	80.4	34.8	67.5	17.9	65.3	52.1
44	M04*5109	46.3	61.5	33.3	47.4	30.1	58.5	47.0
45	M04-4802	50.1 h	76.9	36.1	46.2	31.3	58.1	51.9
46	M03-3616-B11	34.9 l	42.0	19.0	51.0	19.3	53.0	25.1
47	M03-3616-C10	36.8 l	39.6	28.9	37.9	22.1	56.6	35.6
48	OH02-13567	36.5 l	45.9	25.3	41.3	25.5	55.9	25.1
49	OH03-235-2	47.0 h	68.1	25.8	63.3	18.1	51.9	54.7
50	OH02-12678	36.0 l	58.5	22.4	47.7	17.3	44.0	25.8
51	OH02-7217	35.7 l	45.4	19.9	52.6	12.7	47.7	35.6
52	DH22/8	47.3 h	71.7	28.1	36.6	41.7	52.6	53.0
53	DH22/24	27.8 l	25.1	20.9	22.1	33.0	46.3	19.4
54	DH19/176B	47.2 h	70.0	29.4	63.3	14.6	45.7	60.3
55	DHF/SF,23	55.9 h	87.5	42.6	54.6	32.4	48.3	69.7
56	IL02-18228	29.6 l	29.4	28.4	29.4	9.8	43.9	36.5
57	IL02-19463	34.1 l	58.2	35.9	9.8	35.7	39.8	25.3
58	IL04-10118	36.8 l	44.5	23.9	37.9	20.9	39.6	53.8
59	IL04-10721	35.5 l	46.0	29.1	29.9	30.1	49.1	28.7
60	IL04-10741	36.7 l	42.7	28.0	21.2	29.3	60.8	38.0
	AVERAGE	41.6	58.4	29.2	42.3	23.4	52.7	43.5
	MINUMUM	24.9	25.1	7.2	9.8	7.4	38.6	19.4
	MAXIMUM	58.6	89.2	44.0	78.4	41.7	70.2	78.7
	LSD(0.05)	12.1	.	.	.	.	.	.

Table 16. Mean deoxynivalenol content of grain (DON, ppm) from the 2008 NUWWSN.

ENTRY	NAME	AVG		ILURB	INLAF	KSMAN	KYLEX	MDSAL	NEMEA	NYITH	OHWOO	VABLA
1	ERNIE	9.9	l	16.5	8.4	25.6	22.2	2.1	1.0	10.3	2.3	1.1
2	TRUMAN	6.3	l	7.0	10.4	14.2	1.6	0.6	3.2	6.3	8.4	.
3	FREEDOM	9.0	l	19.9	15.6	17.8	3.6	1.4	7.1	5.4	2.5	.
4	PIO2545	18.4		39.0	21.0	39.9	4.6	1.1	14.6	18.0	10.2	.
5	MSULineE6002	12.5		26.2	8.1	24.7	24.1	3.6	1.2	11.2	9.3	4.1
6	MSULineE6001	11.0		30.6	1.8	16.0	21.1	3.2	1.2	17.3	6.6	1.2
7	MSULineE6003	6.4	l	15.8	2.1	4.7	19.0	1.6	3.4	7.9	3.4	0.1
8	MSULineE5011	13.9		26.9	12.4	12.0	26.3	2.2	0.9	19.3	14.7	10.3
9	P.99600A2-4-93	10.1	l	18.3	9.5	18.5	25.8	3.0	1.1	6.3	4.7	3.8
10	P.0179A1-17	12.8		30.7	4.7	16.3	23.4	3.2	4.3	11.7	7.8	13.5
11	P.011010A1-15	11.4		30.3	3.7	13.0	24.2	3.6	2.8	17.4	5.0	2.8
12	P.03112A1-7-3	10.2	l	17.1	6.5	13.7	23.6	2.8	1.9	12.6	3.8	9.8
13	KS980512-2-2	16.2		31.6	15.3	20.8	43.1	3.7	1.3	11.0	11.1	7.5
14	KS05HW14-3	14.7		32.3	15.3	18.9	24.7	4.0	1.8	11.0	16.4	8.2
15	MO050143	6.5	l	11.8	2.6	13.7	14.4	1.6	1.6	3.6	5.6	3.9
16	MO050699	9.3	l	15.0	5.8	19.4	19.5	2.4	1.1	8.9	7.2	4.8
17	MO050921	5.7	l	10.1	3.7	12.0	13.3	2.1	1.4	6.2	2.6	0.3
18	MO050101	7.2	l	9.4	10.2	12.9	17.7	1.9	0.9	3.7	6.3	2.0
19	VA05W-425	6.7	l	8.3	10.4	10.4	14.0	1.7	0.8	7.6	4.0	2.7
20	VA05W-775	4.4	l	5.8	3.1	6.5	13.2	2.7	1.6	2.0	1.9	3.0
21	VA05W-777	5.5	l	6.3	1.1	11.1	12.4	2.2	1.4	7.1	2.5	5.2
22	VA05W-534	4.8	l	6.9	8.6	8.7	10.4	0.9	0.5	4.5	1.2	1.4
23	MD01W233-06-1	4.5	l	9.9	1.3	9.3	9.2	1.3	0.8	5.1	2.1	1.4
24	MD01W233-06-16	5.8	l	13.3	2.8	7.8	13.3	2.3	0.6	5.9	2.2	4.3
25	MD99W483-06-11	7.2	l	25.4	5.3	13.3	6.8	2.5	0.7	6.8	2.0	2.1
26	NYCalresel-L	13.0		35.6	23.5	14.9	19.9	2.3	3.6	7.2	5.5	4.2
27	NY94052-9340	11.3		25.1	12.4	19.9	17.0	4.4	1.9	5.7	8.3	7.1
28	NYW103-1-9100	10.8		30.6	18.4	11.0	12.8	2.7	1.0	3.7	5.4	11.4
29	NYW103-70-9232	15.8		40.2	32.7	14.6	17.3	2.6	4.8	5.8	13.3	10.7
30	NY93246SP-9070	11.5		24.1	3.1	13.9	14.7	4.1	1.8	8.1	18.3	15.1
31	SE911492-4	9.2	l	14.0	5.6	13.6	18.0	3.3	2.2	13.1	6.5	6.4
32	SE89-1873-2	12.8		27.7	22.8	14.0	20.8	3.5	2.7	10.6	8.7	4.8
33	SE98-1089-34	20.8		40.9	19.9	21.1	49.1	4.7	4.6	24.4	18.6	4.3
34	SE93-1094-8	17.4		53.8	7.8	22.8	38.4	7.2	3.8	9.0	8.4	5.1
35	NE05418	7.3	l	14.1	7.6	15.8	15.7	1.0	1.7	4.2	3.9	2.1
36	NE05549	13.8		26.2	20.0	16.5	18.0	4.6	3.0	9.8	16.2	10.0
37	NE05537	10.6		27.1	6.9	13.7	23.0	3.1	1.2	4.9	9.4	5.7
38	NE03488	11.5		24.5	14.7	16.8	21.3	3.0	1.6	4.2	7.9	9.9
39	NE01643	13.7		19.0	36.2	18.7	18.8	3.5	2.0	6.4	7.5	11.4
40	KY00C-2059-16	14.3		28.3	16.5	17.6	22.9	6.2	1.3	12.4	9.1	14.3
41	KY00C-2143-08	9.1	l	14.8	11.7	13.0	17.7	2.3	0.6	15.9	3.6	2.1
42	KY00C-2755-03	12.1		21.7	6.9	19.3	26.7	4.7	0.8	12.7	8.1	8.1
43	KY97C-0321-05-2	16.1		31.3	12.7	18.2	41.1	3.0	3.1	10.7	8.1	16.3
44	M04*5109	10.3	l	22.9	4.1	14.7	28.1	2.4	1.5	5.2	3.6	10.6
45	M04-4802	13.9		33.6	4.3	15.9	29.6	3.4	2.7	8.4	14.7	12.3
46	M03-3616-B11	7.7	l	8.5	2.5	17.7	29.4	2.0	0.8	1.3	4.0	2.8
47	M03-3616-C10	9.6	l	8.9	6.3	20.2	34.7	2.2	1.3	9.0	2.4	1.3
48	OH02-13567	7.2	l	10.1	3.3	14.3	27.4	1.6	0.7	4.8	2.3	0.1
49	OH03-235-2	11.9		25.4	5.6	12.9	42.0	4.5	1.3	4.6	6.1	4.7
50	OH02-12678	7.5	l	10.9	1.3	11.1	27.7	2.5	1.4	4.5	6.1	1.9
51	OH02-7217	10.1	l	16.5	7.9	13.3	34.8	2.0	1.4	6.9	3.4	4.6
52	DH22/8	11.8		37.5	22.8	16.0	20.1	2.0	0.5	1.9	4.0	1.7
53	DH22/24	6.6	l	3.1	0.7	10.0	37.1	0.6	0.5	3.5	1.3	2.5
54	DH19/176B	17.6		36.1	5.9	16.4	51.7	3.4	3.9	2.2	17.0	21.4
55	DHF/SF,23	29.3	h	91.8	33.2	20.5	68.3	6.2	5.5	9.7	17.7	11.2
56	IL02-18228	4.5	l	3.6	2.9	7.4	20.2	0.5	0.5	1.1	1.1	3.1
57	IL02-19463	7.1	l	12.5	5.2	11.5	21.4	1.8	0.5	5.7	4.2	1.3
58	IL04-10118	7.7	l	6.2	11.0	11.7	24.9	1.3	0.5	6.7	5.0	1.7
59	IL04-10721	8.7	l	9.4	1.9	19.3	34.4	0.9	0.5	6.8	3.2	2.2
60	IL04-10741	6.1	l	4.8	1.7	13.2	23.6	3.0	0.5	3.6	2.0	2.2
	AVERAGE	10.7		21.8	9.8	15.4	23.3	2.7	2.0	8.0	6.8	5.8
	MINUMUM	4.4		3.1	0.7	4.7	1.6	0.5	0.5	1.1	1.1	0.1
	MAXIMUM	29.3		91.8	36.2	39.9	68.3	7.2	14.6	24.4	18.6	21.4
	LSD(0.05)	6.0										

Table 17. Mean greenhouse severity (GH, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG		ILURB	MOCOL
1	ERNIE	13.7	l	16.5	10.9
2	TRUMAN	4.5	l	4.7	4.3
3	FREEDOM	18.2	l	25.5	10.8
4	PIONEER 2545	48.3	h	72.8	23.8
5	MSU Line E6002	25.8	l	35.8	15.8
6	MSU Line E6001	6.7	l	7.0	6.4
7	MSU Line E6003	7.0	l	6.3	7.7
8	MSU Line E5011	15.3	l	21.0	9.5
9	P.99600A2-4-93	26.5	l	29.8	23.2
10	P.0179A1-17	18.6	l	31.8	5.4
11	P.011010A1-15	15.5	l	20.2	10.7
12	P.03112A1-7-3	5.6	l	5.0	6.2
13	KS980512-2-2	16.1	l	23.3	8.9
14	KS05HW14-3	30.2	l	35.3	25.0
15	MO050143	6.7	l	4.3	9.2
16	MO050699	5.0	l	6.2	3.9
17	MO050921	4.9	l	4.0	5.9
18	MO050101	8.7	l	12.0	5.5
19	VA05W-425	10.3	l	5.5	15.2
20	VA05W-775	4.1	l	3.5	4.8
21	VA05W-777	4.9	l	4.4	5.5
22	VA05W-534	17.9	l	29.7	6.1
23	MD01W233-06-1	4.8	l	4.4	5.3
24	MD01W233-06-16	20.4	l	17.3	23.4
25	MD99W483-06-11	70.0	h	100.0	40.0
26	NYCalresel-L	51.1	h	67.6	34.6
27	NY94052-9340	11.2	l	8.6	13.8
28	NYW103-1-9100	17.8	l	11.3	24.3
29	NYW103-70-9232	34.1	l	43.8	24.4
30	NY93246SP-9070	18.8	l	10.0	27.5
31	SE911492-4	34.2	l	39.0	29.3
32	SE89-1873-2	62.2	h	91.8	32.6
33	SE98-1089-34	40.7	h	37.5	43.8
34	SE93-1094-8	29.9	l	32.7	27.1
35	NE05418	23.7	l	17.5	29.8
36	NE05549	31.3	l	27.4	35.1
37	NE05537	32.2	l	13.3	51.1
38	NE03488	58.8	h	56.7	60.9
39	NE01643	33.7	l	25.0	42.4
40	KY00C-2059-16	46.3	h	36.5	56.0
41	KY00C-2143-08	39.5	h	71.2	7.8
42	KY00C-2755-03	36.4		19.7	53.0
43	KY97C-0321-05-2	49.5	h	65.7	33.2
44	M04*5109	44.6	h	34.8	54.5
45	M04-4802	45.5	h	30.2	60.7
46	M03-3616-B11	13.8	l	15.5	12.0
47	M03-3616-C10	17.9	l	16.0	19.7
48	OH02-13567	6.2	l	3.3	9.1
49	OH03-235-2	24.5	l	25.0	24.0
50	OH02-12678	23.3	l	30.0	16.5
51	OH02-7217	15.5	l	21.6	9.4
52	DH 22/8	30.1	l	50.2	10.0
53	DH 22/24	9.0	l	9.7	8.2
54	DH 19/176B	8.1	l	9.0	7.2
55	DH F/SF, 23	43.1	h	67.5	18.8
56	IL02-18228	24.1	l	38.0	10.2
57	IL02-19463	16.3	l	16.2	16.4
58	IL04-10118	14.5	l	16.2	12.7
59	IL04-10721	7.6	l	8.2	7.1
60	IL04-10741	29.8	l	52.2	7.3
	AVERAGE	23.9		27.4	20.4
	MINUMUM	4.1		3.3	3.9
	MAXIMUM	70.0		100.0	60.9
	LSD(0.05)	31.0		.	.

Table 18. Mean heading date (HD, julian days) from the 2008 NUWWSN.

ENTRY	NAME	AVG		ILURB	INLAF	KSMAN	KYLEX	MDSAL	MIELA	MOCOL	NYITH	OHWOO	ONRID	VABLA
1	ERNIE	139	l	144	138	138	129	116	155	141	148	142	154	126
2	TRUMAN	147		151	146	143	140	133	160	150	153	147	159	134
3	FREEDOM	144		148	145	142	136	119	159	148	152	147	157	131
4	PIO2545	144		144	141	140	137	125	158	150	150	145	156	132
5	MSULineE6002	143		147	139	139	134	118	160	150	150	145	157	130
6	MSULineE6001	142		148	139	139	129	118	159	148	149	144	156	127
7	MSULineE6003	150	h	153	147	147	142	141	161	151	154	152	160	139
8	MSULineE5011	146		148	145	143	139	134	159	148	154	148	157	134
9	P.99600A2-4-93	142		144	140	138	134	117	157	146	151	145	156	129
10	P.0179A1-17	142		145	140	140	133	120	159	148	149	144	157	131
11	P.011010A1-15	141		142	139	139	131	116	157	148	151	144	155	128
12	P.03112A1-7-3	145		146	144	143	138	124	164	148	153	146	158	132
13	KS980512-2-2	144		148	144	143	135	119	159	148	150	145	158	130
14	KS05HW14-3	141		141	138	140	134	122	157	146	146	141	155	129
15	MO050143	143		146	142	140	133	118	159	148	150	146	157	129
16	MO050699	145		146	144	142	135	132	159	148	150	146	158	133
17	MO050921	149	h	152	146	146	143	134	162	151	155	149	161	138
18	MO050101	143		146	144	140	132	120	159	148	150	145	158	129
19	VA05W-425	142		146	140	139	134	119	158	144	150	145	157	129
20	VA05W-775	142		144	144	139	135	121	158	146	150	144	157	128
21	VA05W-777	143		146	146	140	134	122	158	150	148	145	157	128
22	VA05W-534	140		142	140	138	129	116	157	144	149	142	155	127
23	MD01W233-06-1	142		147	140	140	131	118	157	144	150	146	155	129
24	MD01W233-06-16	143		148	140	141	134	119	159	148	149	144	159	128
25	MD99W483-06-11	139	l	144	138	138	125	115	156	141	148	140	155	126
26	NYCalresel-L	144		145	144	141	133	135	157	148	151	144	156	132
27	NY94052-9340	149	h	150	149	145	142	136	160	151	154	150	160	137
28	NYW103-1-9100	149	h	151	150	146	143	136	160	151	155	151	160	140
29	NYW103-70-9232	148		151	147	145	142	136	160	151	149	150	158	136
30	NY93246SP-9070	148	h	149	148	144	142	133	161	151	153	149	160	137
31	SE911492-4	144		145	145	142	136	122	159	146	150	147	157	131
32	SE89-1873-2	144		146	144	141	135	127	158	148	150	145	157	130
33	SE98-1089-34	144		146	146	141	135	124	159	148	154	146	157	132
34	SE93-1094-8	141		143	140	138	134	118	157	150	148	143	154	130
35	NE05418	141		143	143	139	130	118	158	148	148	144	155	128
36	NE05549	145		146	146	142	138	131	159	151	149	147	157	132
37	NE05537	141		144	139	139	129	118	159	151	149	141	156	130
38	NE03488	143		146	139	142	134	119	160	150	150	147	157	131
39	NE01643	147		148	145	143	140	132	160	150	153	147	158	135
40	KY00C-2059-16	144		147	144	142	135	119	159	148	152	146	157	131
41	KY00C-2143-08	140	l	142	139	138	127	116	157	142	150	143	155	126
42	KY00C-2755-03	145		147	144	142	132	133	159	148	154	147	158	132
43	KY97C-0321-05-2	146		148	145	141	137	136	159	148	152	146	158	132
44	M04*5109	142		147	140	140	131	118	158	146	150	146	158	130
45	M04-4802	143		147	145	141	134	119	159	148	150	146	157	131
46	M03-3616-B11	143		144	145	140	136	122	157	148	150	146	156	133
47	M03-3616-C10	141		142	140	139	133	118	157	148	148	145	156	128
48	OH02-13567	143		145	145	142	136	122	158	148	148	145	158	130
49	OH03-235-2	146		148	146	142	138	132	159	150	153	146	158	134
50	OH02-12678	145		147	145	142	138	123	159	150	151	147	157	131
51	OH02-7217	146		147	146	142	138	131	158	150	151	146	159	134
52	DH22/8	141		148	139	139	128	114	157	146	149	144	156	126
53	DH22/24	141		144	142	139	131	116	156	142	150	143	156	128
54	DH19/176B	147		150	146	144	140	133	160	151	154	148	159	132
55	DHF/SF,23	143		144	141	134	119	159	150	152	145	158	130	.
56	IL02-18228	140	l	141	139	137	128	117	156	146	148	143	155	127
57	IL02-19463	138	l	140	138	136	126	114	156	141	148	142	152	125
58	IL04-10118	141		144	143	139	133	119	156	144	148	146	155	128
59	IL04-10721	142		144	144	139	129	118	157	148	150	145	156	128
60	IL04-10741	140		143	140	138	129	116	157	146	148	141	155	126
	AVERAGE	143		146	143	141	134	124	158	148	150	146	157	131
	MINUMUM	138		140	138	134	119	114	150	141	145	140	130	125
	MAXIMUM	150		153	150	147	143	159	164	152	155	158	161	140
	LSD(0.05)	1.9		.	.	.	.	.	.	.	.	.	.	.

Table 19. Mean plant height (HGT, inches) from the 2008 NUWWSN.

ENTRY	NAME	AVG		KYLEX	MDSAL	MIELA
1	ERNIE	28.7	l	34	24	28
2	TRUMAN	31.3		36	26	32
3	FREEDOM	32.7		38	29	31
4	PIO2545	31.3		35	28	31
5	MSULineE6002	32.0		36	28	32
6	MSULineE6001	27.7	l	33	23	27
7	MSULineE6003	31.3		38	26	30
8	MSULineE5011	30.7		37	26	29
9	P.99600A2-4-93	30.3		33	28	30
10	P.0179A1-17	29.3	l	34	27	27
11	P.011010A1-15	29.7		35	25	29
12	P.03112A1-7-3	27.0	l	31	26	24
13	KS980512-2-2	31.7		36	28	31
14	KS05HW14-3	31.0		36	28	29
15	MO050143	31.0		35	28	30
16	MO050699	30.0		34	28	28
17	MO050921	31.3		36	30	28
18	MO050101	31.3		36	27	31
19	VA05W-425	29.3	l	34	26	28
20	VA05W-775	28.7	l	34	25	27
21	VA05W-777	29.7		35	26	28
22	VA05W-534	29.0	l	36	24	27
23	MD01W233-06-1	30.0		34	29	27
24	MD01W233-06-16	29.7		33	28	28
25	MD99W483-06-11	28.0	l	33	23	28
26	NYCalresel-L	34.3		39	31	33
27	NY94052-9340	36.7		42	35	33
28	NYW103-1-9100	43.0	h	49	40	40
29	NYW103-70-9232	38.7		45	35	36
30	NY93246SP-9070	35.7		41	33	33
31	SE911492-4	28.7	l	34	25	27
32	SE89-1873-2	31.0		37	25	31
33	SE98-1089-34	27.3	l	32	25	25
34	SE93-1094-8	29.7		35	24	30
35	NE05418	32.3		39	25	33
36	NE05549	34.0		37	32	33
37	NE05537	33.3		38	30	32
38	NE03488	34.3		40	31	32
39	NE01643	33.3		38	30	32
40	KY00C-2059-16	32.7		38	28	32
41	KY00C-2143-08	29.0	l	31	27	29
42	KY00C-2755-03	34.0		38	31	33
43	KY97C-0321-05-2	31.3		35	28	31
44	M04*5109	32.0		36	28	32
45	M04-4802	32.0		36	29	31
46	M03-3616-B11	32.7		36	31	31
47	M03-3616-C10	31.0		35	28	30
48	OH02-13567	33.7		38	32	31
49	OH03-235-2	32.0		38	27	31
50	OH02-12678	33.0		37	31	31
51	OH02-7217	33.7		39	31	31
52	DH22/8	35.3		41	27	38
53	DH22/24	31.7		36	29	30
54	DH19/176B	36.3		41	34	34
55	DHF/SF,23	30.7		34	29	29
56	IL02-18228	34.0		39	32	31
57	IL02-19463	29.7		34	25	30
58	IL04-10118	29.7		35	26	28
59	IL04-10721	31.7		37	27	31
60	IL04-10741	31.0		36	26	31
	AVERAGE	31.7		37	28	30
	MINUMUM	27.0		31	23	24
	MAXIMUM	43.0		49	40	40
	LSD(0.05)	2.5		.	.	.

Table 20. Quality assessment for the 2008 NUWWSN. Provided by the USDA Soft Wheat Quality Lab and Dr. Ed Souza using grain from Lafayette IN provided by Herb Ohm

ENTRY	MILLING QUALITY SCORE		BAKING QUALITY SCORE		SOFT. EQUIV. SCORE		TEST WT. LB/BU		FLOUR YIELD %		SOFTNESS EQUIV. %		FLOUR PROT. %		LACTIC ACID SRC %	SUCROSE SRC %
ERNIE	66.3	C	82.4	A	63.6	C	58.4	*	68.7		58.0		8.7		75.0	78.6
TRUMAN (STD)	62.6	C	38.0	F	64.1	C	60.0		68.0		58.2		8.0		83.8	99.3
FREEDOM	68.4	C	71.7	B	59.9	D	59.3		69.1		56.7		8.3		77.0	83.1
PIONEER 2545	51.3	D	59.7	D	53.4	D	59.3		65.7	Q	54.5	*	8.7		80.5	85.9
MSU LINE E6002	56.6	D	53.5	D	30.6	F	59.0		66.8	*	46.5	Q	9.4	*	65.8	81.5
MSU LINE E6001	53.7	D	51.7	D	62.7	C	58.7	*	66.2	Q	57.7		9.3	*	90.8	90.5
MSU LINE E6003	63.4	C	57.8	D	35.3	F	62.9		68.2		48.2	Q	8.8	*	101.4	82.0
MSU LINE E5011	79.7	B	86.7	A	73.1	B	59.3		71.4		61.4		7.2		88.9	82.3
P.99600A2-4-93	67.1	C	39.7	F	61.2	C	60.4		68.9		57.2		8.5		85.5	96.7
P.0179A1-17	69.7	C	64.4	C	57.4	D	58.5	*	69.4		55.9		8.9	*	68.5	84.5
P.011010A1-15	66.9	C	68.2	C	69.3	C	58.4	*	68.8		60.0		8.8	*	90.9	85.9
P.03112A1-7-3	74.3	B	60.5	C	44.7	E	60.2		70.3		51.4	Q	8.7		70.6	83.5
KS980512-2-2	62.7	C	32.1	F	19.7	F	60.7		68.0		42.7	Q	9.2	*	93.1	88.4
KS05HW14-3	73.2	B	43.1	E	24.7	F	59.7		70.1		44.4	Q	9.3	*	94.0	84.7
MO 050143	56.7	D	72.9	B	56.9	D	60.0		66.8	*	55.7		8.5		80.8	81.6
MO 050699	64.7	C	67.9	C	59.5	D	59.3		68.4		56.6		8.2		80.4	85.1
MO 050921	76.8	B	72.9	B	61.5	C	60.5		70.8		57.3		7.9		87.3	84.0
MO 050101	56.8	D	74.0	B	58.0	D	59.9		66.8	*	56.1		8.4		77.6	81.5
VA05W-425	55.5	D	58.3	D	54.7	D	59.6		66.6	*	54.9	*	9.1	*	88.2	86.0
VA05W-775	54.6	D	49.9	E	65.9	C	62.4		66.4	Q	58.8		8.4		99.3	93.8
VA05W-777	53.9	D	47.9	E	64.4	C	62.4		66.2	Q	58.3		8.7		97.1	93.7
VA05W-534	59.4	D	61.3	C	69.4	C	58.8	*	67.4		60.1		8.9	*	96.4	88.7
MD01W233-06-1	61.8	C	55.6	D	59.5	D	62.0		67.8		56.6		9.1	*	75.8	88.4
MD01W233-06-16	45.0	E	32.5	F	45.0	E	62.8		64.5	Q	51.5	Q	9.8	Q	87.3	93.2
MD99W483-06-11	75.2	B	56.6	D	74.5	B	59.4		70.5		61.9		8.7		91.8	92.5
NYCALRESEL-L	74.1	B	85.6	A	77.4	B	59.3		70.3		62.9		7.5		87.9	83.1
NY94052-9340	61.4	C	65.5	C	66.6	C	59.9		67.7		59.1		8.4		89.5	87.3
NYW103-1-9100	69.3	C	65.8	C	65.5	C	61.2		69.3		58.7		9.0	*	82.1	85.8
NYW103-70-9232	67.4	C	56.1	D	60.6	C	62.1		68.9		57.0		8.7		84.4	89.1
NY93246SP-9070	60.4	C	65.2	C	63.8	C	61.1		67.5		58.1		8.6		83.6	86.3
SE91 1492-4	42.4	E	26.0	F	44.8	E	61.8		64.0	Q	51.5	Q	8.7		83.3	98.4
SE89-1873-2	67.0	C	70.9	B	67.1	C	59.5		68.9		59.3		8.3		104.2	85.4
SE98-1089-34	57.2	D	26.8	F	56.6	D	57.9	*	66.9	*	55.6		8.6		87.1	101.0
SE93-1094-8	73.9	B	86.4	A	72.2	B	59.2		70.2		61.1		8.3		98.1	80.0
NE05418	77.8	B	48.7	E	31.4	F	62.1		71.0		46.8	Q	10.1	Q	77.1	82.4
NEO5549	73.2	B	38.8	F	29.5	F	59.7		70.1		46.1	Q	9.1	*	90.4	88.2
NE05537	71.8	B	21.1	F	16.9	F	61.1		69.8		41.7	Q	10.0	Q	92.6	90.7
NE03488	74.0	B	54.6	D	35.4	F	61.3		70.3		48.2	Q	8.3		90.7	84.5
NE01643	76.8	B	53.7	D	53.7	D	59.3		70.8		54.6	*	7.5		87.2	91.1
KY00C-2059-16	67.5	C	53.9	D	77.2	B	60.2		69.0		62.8		8.4		111.9	94.9
KY00C-2143-08	63.9	C	51.4	D	53.5	D	60.1		68.2		54.5	*	9.2	*	86.1	88.5
KY00C-2755-03	62.7	C	33.0	F	64.6	C	59.6		68.0		58.4		8.9	*	95.8	99.7
KY97C-0321-05-2		F	140.3	A	126.4	A	60.2		41.4	Q	80.0				157.4	87.3
M04*5109	71.3	B	38.4	F	74.6	B	60.9		69.7		61.9		8.2		110.8	101.3
M04-4802	67.9	C	39.6	F	70.3	B	59.9		69.0		60.4		8.5		111.3	99.2
M03-3616-B11	67.7	C	73.9	B	54.5	D	60.5		69.0		54.9	*	9.1	*	71.4	79.3
M03-3616-C10	60.3	C	60.7	C	69.5	C	58.3	*	67.5		60.1		8.8	*	71.1	89.2
OH02-13567	69.6	C	42.5	E	61.8	C	58.5	*	69.4		57.4		8.0		84.4	96.8
OH03-235-2	72.7	B	67.0	C	72.2	B	60.7		70.0		61.1		8.5		108.4	87.7
OH02-12678	67.6	C	40.4	E	55.5	D	60.6		69.0		55.2		8.5		85.0	95.1
OH02-7217	68.2	C	87.2	A	72.3	B	59.0		69.1		61.1		7.7		93.0	80.8
DH22/8	72.4	B	47.3	E	27.2	F	61.3		69.9		45.3	Q	9.7	Q	75.8	82.9
DH22/24	56.9	D	80.1	A	78.9	B	56.0	Q	66.8	*	63.4		7.3		87.1	86.4
DH19/176B	61.0	C	71.5	B	60.0	D	58.9		67.7		56.8		8.4		77.5	83.2
DHF/SF,23	66.3	C	66.0	C	68.1	C	58.7	*	68.7		59.6		8.0		84.2	88.3
IL02-18228	63.8	C	42.7	E	49.5	E	59.6		68.2		53.1	*	8.9	*	85.4	92.0
IL02-19463	61.9	C	77.7	B	84.1	A	58.5	*	67.8		65.2		8.3		99.0	86.6
IL04-10118	65.3	C	74.8	B	82.2	A	58.6	*	68.5		64.5		8.5		86.6	86.9
IL04-10721	65.8	C	78.9	B	74.5	B	60.2		68.6		61.9		7.9		93.1	84.5
IL04-10741	64.6	C	54.9	D	54.1	D	62.3		68.4		54.7	*	8.9	*	81.1	87.7
AVERAGE	62.8		59.1		59.4		60.0		68.0		56.6		8.5		88.7	88.1
MINIMUM	42.4		21.1		16.9		56.0		41.4		41.7		7.2		65.8	78.6
MAXIMUM	79.7		140.3		126.4		62.9		71.4		80.0		10.1		157.4	101.3

Table 21. Means for other traits for the 2008 NUWWSN as reported by cooperators.

		VABLA	VABLA	VABLA	ROMAN	VABLA	MDSAL	ROMAN	ILURB	MOCOL	MOCOL	MDSAL
		BYDV (0 9)	SGB (0-9)	LR (0-9)	LR	PM 0-9	PM (0-9)	FHB AUDPC	WINTER SURVIVAL (%)	TW	YIELD	SEED WGT
1	ERNIE	0.0	3.0	6.5	20MR	6.0	2.0	363.7	50.0	27.6	29.1	2.7
2	TRUMAN	0.5	1.0	7.0	20R-MR	7.0	5.0	367.4	76.7	53.2	66.3	1.7
3	FREEDOM	3.0	1.5	3.5	15MR	4.0	6.0	258.6	83.3	40.4	46.6	2.0
4	PIONEER 2545	1.5	3.5	5.5	TRMR	5.0	0.0	601.1	100.0	40.2	49.3	1.6
5	MSU Line E6002	0.0	3.0	5.0	30MS	6.5	0.0	518.1	7.0	27.4	29.9	2.2
6	MSU Line E6001	3.0	5.5	7.0	20MR-MS	0.0	0.0	167.7	6.7	25.2	29.6	1.9
7	MSU Line E6003	4.0	5.0	7.0	50MS-S	7.0	0.0	302.2	7.0	22.3	25.3	1.4
8	MSU Line E5011	1.5	1.5	8.5	50MS-S	2.5	5.0	671.7	100.0	30.3	36.2	1.8
9	P.99600A2-4-93	0.5	6.5	0.0	TRR	5.0	6.0	596.8	91.7	23.9	30.6	2.1
10	P.0179A1-17	0.0	4.0	0.5	20MR	4.5	6.0	269.7	100.0	27.4	30.3	1.8
11	P.011010A1-15	0.5	3.5	2.5	TRMR	5.5	0.0	414.9	100.0	47.4	58.3	1.9
12	P.03112A1-7-3	0.0	0.5	6.0	TRR	0.0	0.0	262.0	100.0	28.5	30.3	1.4
13	KS980512-2-2	2.0	3.0	0.5	TR MR	6.5	3.0	307.8	63.3	38.0	40.8	2.1
14	KS05HW14-3	1.0	5.5	2.0	20 MR	3.5	4.0	542.4	100.0	22.2	25.2	1.4
15	MO050143	0.0	2.5	5.5	60MS	5.5	6.0	257.7	60.0	30.3	33.7	1.8
16	MO050699	0.0	2.0	1.5	15MR	5.0	0.0	271.4	100.0	42.8	51.1	1.8
17	MO050921	0.0	3.5	5.0	80MR-MS	2.5	0.0	363.3	86.7	35.8	38.3	2.2
18	MO050101	0.0	2.0	5.5	50 MS	6.5	0.0	395.9	63.3	52.2	66.1	1.8
19	VA05W-425	1.5	4.5	6.0	40 MS	5.5	3.0	351.0	60.0	30.6	31.6	2.1
20	VA05W-775	0.0	5.5	6.0	10 MR	6.0	6.0	176.0	100.0	49.6	60.8	1.9
21	VA05W-777	0.0	5.0	7.5	TR MR	4.0	7.0	230.8	100.0	43.8	45.7	1.7
22	VA05W-534	3.0	2.0	1.0	TR R	5.5	7.0	321.6	100.0	44.7	53.2	2.2
23	MD01W233-06-1	1.0	0.0	1.0		1.5	0.0	336.8	68.3	32.7	40.5	2.5
24	MD01W233-06-16	1.0	0.5	0.0	TR R	0.5	0.0	332.4	38.3	45.9	51.8	2.5
25	MD99W483-06-11	0.0	3.0	6.0	20 MR	6.0	6.0	406.7	40.0	22.2	27.7	2.3
26	NYCalresel-L	0.0	1.5	7.5	60 MS	2.0	0.0	692.8	100.0	23.4	27.8	1.8
27	NY94052-9340	5.0	1.0	6.0	10 MR	3.0	3.0	558.0	100.0	10.0	13.9	2.0
28	NYW103-1-9100	2.0	1.5	7.5	30 MR	4.0	6.0	790.3	93.3	21.8	24.4	2.1
29	NYW103-70-9232	1.5	3.5	7.5	20 MR	7.0	6.0	762.8	100.0	33.0	43.4	1.6
30	NY93246SP-9070	2.0	2.5	6.5	TR MR	5.0	6.0	653.7	100.0	30.4	32.6	2.4
31	SE911492-4	2.5	0.5	1.5	TR R	0.0	0.0	372.6	100.0	23.7	28.9	2.2
32	SE89-1873-2	0.5	2.5	7.5	TR MR	6.5	0.0	419.3	100.0	30.7	39.5	1.6
33	SE98-1089-34	0.0	1.0	7.5	20 MR-MS	2.5	0.0	559.2	100.0	23.5	26.2	2.0
34	SE93-1094-8	2.5	5.5	7.5	30 MS	5.0	0.0	373.0	100.0	36.1	39.6	2.0
35	NE05418	2.5	1.5	5.5	30 MS	6.0	4.0	351.1	100.0	38.1	39.5	1.8
36	NE05549	4.0	5.0	4.0	TR R	5.5	6.0	574.8	100.0	21.2	24.7	1.9
37	NE05537	4.5	4.5	0.5	0R	9.0	0.0	411.7	93.3	26.1	27.4	2.2
38	NE03488	0.0	6.5	0.0	TR R	7.0	5.0	462.0	86.7	36.0	39.7	2.8
39	NE01643	2.0	5.5	1.5	20MR	5.5	7.0	617.6	100.0	36.5	38.2	1.9
40	KY00C-2059-16	0.5	2.5	5.0	20 MS	2.0	3.0	239.4	100.0	38.3	43.1	2.5
41	KY00C-2143-08	0.0	1.0	6.0	30 MS	1.5	0.0	226.9	91.7	42.3	45.9	3.1
42	KY00C-2755-03	0.0	1.0	5.0	40 MS	4.5	4.0	411.2	100.0	30.3	31.7	2.5
43	KY97C-0321-05-2	0.5	0.5	1.5	20 MR-MS	2.0	0.0	496.5	91.7	32.9	37.3	2.0
44	M04*5109	0.5	4.5	3.5	20 MR	6.5	7.0	373.8	68.3	42.3	44.2	2.6
45	M04-4802	3.5	6.0	6.5	20 MS	2.5	2.0	494.3	100.0	39.5	49.8	1.5
46	M03-3616-B11	1.0	0.5	4.0	TR R	3.5	6.0	287.7	100.0	39.1	42.6	2.3
47	M03-3616-C10	4.0	2.0	4.0	TR R	3.5	0.0	313.6	100.0	43.9	50.3	2.3
48	OH02-13567	3.5	2.5	6.5	20 MR	7.0	0.0	259.3	100.0	31.4	32.7	2.1
49	OH03-235-2	3.5	3.0	3.5	0R	0.5	0.0	525.9	100.0	32.3	38.7	2.1
50	OH02-12678	1.5	0.5	5.0	30 MS	0.0	0.0	280.6	100.0	48.5	51.4	2.6
51	OH02-7217	1.5	2.5	7.5	50 MS	6.0	4.0	366.8	100.0	39.0	41.8	1.9
52	DH 22/8	2.5	4.5	7.0	80MS-S	4.5	0.0	423.9	8.3	16.8	34.1	2.2
53	DH 22/24	2.5	6.0	6.5	80MS-S	6.5	7.0	160.3	93.3	50.4	56.6	2.0
54	DH 19/176B	2.5	4.0	5.5	TR MR	5.5	2.0	563.3	83.3	18.7	23.1	1.5
55	DH F/SF, 23	4.0	2.0	7.0	20 MS	5.0	5.0	642.9	100.0	18.2	22.8	1.6
56	IL02-18228	0.0	1.5	3.5	TR MS	6.0	6.0	358.4	100.0	53.3	58.9	2.4
57	IL02-19463	0.0	3.5	1.5	70 MS	5.0	0.0	415.8	100.0	47.9	57.3	2.1
58	IL04-10118	0.0	1.0	6.5	10 MR-MS	5.5	5.0	462.4	100.0	36.9	42.1	2.2
59	IL04-10721	0.0	4.5	2.0	TR MR	2.5	0.0	254.0	100.0	51.9	57.0	1.8
60	IL04-10741	3.0	1.5	2.5	TR R-MR	2.5	0.0	425.2	100.0	54.8	64.9	1.7
	AVERAGE	1.5	2.9	4.6		4.4	2.8	411.1	85.2	34.7	40.0	2.0
	MINIMUM	0.0	0.0	0.0		0.0	0.0	160.3	6.7	10.0	13.9	1.4
	MAXIMUM	5.0	6.5	8.5		9.0	7.0	790.3	100.0	54.8	66.3	3.1

Table 22. Presence (yes) or absence (no) of genes in the entries of the 2008 NUWWSN based on marker analyses performed by the USDA Small Grains Genotyping Lab and provided by Gina Brown-Guedira. Band size data is available from Dr. Brown-Guedira.

ENTRY	NAME	FHB1	FHB QTL from 3BS cent.	FHB3 QTL from Wuhan1	FHB QTL from 5AS Asian sources	Sr24	1RS	Sr36	H13	H9	Bx7 over-expression allele	Yr17/ Lr37/ Sr38	Bvd2/ Bvd3
1	ERNIE	no	**yes**	no	no	no	no	**hetero**	no	no	no	no	no
2	TRUMAN	no	no	no	no	no	no	no	no	no	no	no	no
3	FREEDOM	no	**hetero**	no	no	no	**t1RS.1BL**	**hetero**	no	no	no	no	no
4	PIONEER 2545	no	no	no	no	no	no	no	no	no	no	no	no
5	MSU Line E6002	no	no	no	no	no	no	no	no	no	no	no	no
6	MSU Line E6001	nd	no	**yes?**	**yes**	no	**t1RS.1BL**	no	no	nd	no	no	no
7	MSU Line E6003	nd	no	**yes?**	**yes**	no	no	no	no	no	no	no	no
8	MSU Line E5011	no	no	no	no	no	no	no	no	no	no	no	no
9	P.99600A2-4-93	no	no	no	no	no	no	no	no	nd	no	**yes**	no
10	P.0179A1-17	nd	no	no	no	no	**t1RS.1BL**	**yes**	no	no	**yes**	no	**yes**
11	P.011010A1-15	no	no	no	no	no	no	**hetero**	no	no	no	**yes**	**yes**
12	P.03112A1-7-3	no	no	no	no	no	**t1RS.1BL**	**yes**	no	no	no	**yes**	**yes**
13	KS980512-2-2	no	no	no	no	no	**t1RS.1AL**	no	no	no	no	**yes**	nd
14	KS05HW14-3	no	no	no	no	no	no	no	no	no	no	no	no
15	MO050143	no	no	no	no	no	no	no	no	no	no	no	no
16	MO050699	no	no	no	no	no	no	**yes**	no	no	no	no	no
17	MO050921	no	**yes**	no	no	no	no	**hetero**	no	no	no	no	no
18	MO050101	no	no	no	no	no	no	no	no	no	no	no	no
19	VA05W-425	no	no	**yes?**	?	no	no	no	no	nd	no	no	no
20	VA05W-775	**yes**	?	no	no	no	no	no	no	no	no	no	no
21	VA05W-777	no	?	no	no	no	no	no	no	no	no	no	no
22	VA05W-534	no	**yes**	no	no	no	**t1RS.1AL**	no	no	no	no	no	no
23	MD01W233-06-1	no	no	no	no	no	**t1RS.1AL**	no	no	no	no	no	no
24	MD01W233-06-16	no	no	no	no	**yes**	**t1RS.1AL**	no	no	no	no	no	no
25	MD99W483-06-11	no	no	no	no	no	no	**yes**	no	no	no	no	no
26	NYCalresel-L	no	no	no	no	no	no	no	no	no	no	no	no
27	NY94052-9340	no	no	no	no	no	no	no	no	no	no	no	no
28	NYW103-1-9100	no	no	no	no	no	no	no	no	no	no	no	no
29	NYW103-70-9232	no	no	no	no	no	no	no	no	no	no	no	no
30	NY93246SP-9070	no	no	no	no	**yes**	no	no	no	no	no	no	no
31	SE911492-4	no	no	no	no	**yes**	**t1RS.1AL**	no	no	no	no	no	no
32	SE89-1873-2	no	no	no	no	no	no	no	no	no	no	no	no
33	SE98-1089-34	no	no	no	no	no	no	no	no	no	no	no	no
34	SE93-1094-8	no	no	no	no	no	**t1RS.1AL**	no	no	no	no	no	no
35	NE05418	no	no	no	no	no	no	no	no	no	no	no	no
36	NE05549	no	no	no	no	**yes**	no	no	no	no	no	no	no
37	NE05537	no	no	no	no	**yes**	no	no	no	no	no	**yes**	no
38	NE03488	no	no	no	no	no	no	no	no	no	no	**yes**	no
39	NE01643	no	no	no	no	no	**t1RS.1AL**	no	no	no	no	no	no
40	KY00C-2059-16	no	no	no	no	no	no	no	no	no	no	no	no
41	KY00C-2143-08	no	no	no	no	no	**t1RS.1BL**	**yes**	no		no	no	no
42	KY00C-2755-03	no	no	no	no	no	no	no	no	no	**yes**	no	no
43	KY97C-0321-05-2	no	no	no	no	no	no	no	no	no	no	no	no
44	M04*5109	no	no	no	no	no	no	no	no	no	no	no	no
45	M04-4802	no	no	no	no	no	no	no	no	no	**hetero**	no	no
46	M03-3616-B11	no	no	no	no	no	no	no	no		nd	no	no
47	M03-3616-C10	no	no	no	no	no	both?	no	no	no	no	no	no
48	OH02-13567	no	**yes**	no	no	no	no	no	no	no	no	no	no
49	OH03-235-2	no	no	no	no	no	no	no	no	no	no	no	no
50	OH02-12678	no	no	no	**yes?**	no	**t1RS.1AL**	no	no		no	no	no
51	OH02-7217	no	**yes**	no	no	no	no	no	no	no	no	no	no
52	DH 22/8	no	no	no	no	no	no	no	no	no	nd	no	no
53	DH 22/24	no	no	no	no	no	no	no	no	no	no	no	no
54	DH 19/176B	no	no	no	no	no	no	no	no	no	no	no	no
55	DH F/SF, 23	no	no	no	no	no	no	no	no	no	**yes**	no	no
56	IL02-18228	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
57	IL02-19463	no	no	no	no	no	no	no	no	no	no	no	no
58	IL04-10118	no	no	no	no	no	**t1RS.1AL**	no	no	no	no	no	no
59	IL04-10721	no	no	no	no	no	no	no	no	no	no	no	no
60	IL04-10741	no	no	no	no	no	no	no	no	no	nd	no	no

Table 23. Mean incidence (INC, %) from the 2008 PNUWWSN.

ENTRY	NAME	AVG		ILURB	KYLEX	MIELA	MOCOL	ONRID	VABLA
1	ERNIE	24.2	l	39.0	21.9	16.3	21.3	26.7	20.0
2	TRUMAN	18.0	l	28.7	16.3	12.0	27.4	16.3	7.5
3	FREEDOM	34.0		47.4	19.7	37.1	45.6	29.0	25.0
4	PIONEER 2545	46.6	h	63.5	41.1	34.4	50.0	60.7	30.0
5	MSU Line E2043	39.1		58.3	43.4	31.1	24.2	55.3	22.5
6	MSU Line E6059	40.6	h	65.8	46.3	29.7	40.1	44.3	17.5
7	MSU Line E6042	30.2		44.3	10.6	49.8	21.2	22.7	32.5
8	MSU Line E6038	36.9		41.2	20.4	53.0	40.0	26.7	40.0
9	MSU Line E5024	37.1		55.7	44.7	20.1	38.0	44.3	20.0
10	P.992192A1-5-4-5-81	38.0		52.5	18.2	32.7	27.4	59.7	37.5
11	P.0172A1-12-1	17.4	l	23.6	15.4	9.7	14.4	29.0	12.5
12	P.0175A1-37-4	23.6	l	32.7	16.4	10.5	23.1	38.7	20.0
13	P.04281A1-4-5	34.3		34.7	22.6	18.9	55.3	44.3	30.0
14	P.04287A1-16	34.0		40.9	35.5	26.5	34.6	54.0	12.5
15	P.03630A1-18	27.3	l	34.9	8.7	14.8	33.9	38.7	32.5
16	MO050600	33.8		52.4	10.0	43.1	23.8	60.7	12.5
17	MO050261	31.2		39.5	21.2	19.7	36.5	55.3	15.0
18	MO051150	31.3		58.5	36.4	19.3	27.8	33.0	12.5
19	MO050617	37.9		65.9	21.2	31.8	49.4	29.0	30.0
20	MO041020	24.3	l	37.9	22.7	17.8	25.0	34.7	7.5
21	MO050917	35.2		59.6	32.0	20.8	32.3	38.7	27.5
22	VA06W-553	29.7		32.2	12.7	10.7	27.8	34.7	60.0
23	VA06W-558	25.4	l	27.7	17.5	21.6	21.6	16.3	47.5
24	VA06W-561	20.7	l	25.6	17.5	18.7	33.5	16.3	12.5
25	VA06W-615	36.8		35.5	22.4	23.7	39.6	44.3	55.0
26	VA06W-622	24.1	l	25.7	17.8	25.5	24.2	29.0	22.5
27	TRIBUTE	29.5		46.5	17.5	24.9	40.8	34.7	12.5
28	BDLS. HONEY-6	46.5	h	80.1	30.5	39.2	45.7	38.7	45.0
29	SE98 1083-14	27.6	l	41.2	15.3	25.0	38.8	33.0	12.5
30	SEKY93 C-1699-14	35.0		55.5	19.7	40.9	34.8	44.3	15.0
31	SE94 C-0480-2-2	40.6	h	65.6	25.2	31.6	41.6	44.3	35.0
32	SE98 1106-6	35.8		58.0	27.9	38.0	31.7	44.3	15.0
33	SE94-1012-25	45.7	h	74.2	19.3	50.9	44.8	59.7	25.0
34	KY02C-3005-25	18.2	l	18.4	14.0	7.6	26.3	33.0	10.0
35	KY02C-3005-44	25.7	l	27.7	20.1	13.3	33.3	49.7	10.0
36	KY02C-3008-05	22.3	l	26.5	22.1	9.1	28.6	40.0	7.5
37	KY02C-3004-04	24.6	l	36.3	24.9	16.6	33.3	29.0	7.5
38	KY01C-1542-07	51.8	h	87.1	35.9	50.0	47.0	66.0	25.0
39	KY99C-1205-06-1	36.1		58.3	18.4	42.3	40.5	44.3	12.5
40	M04-4566	45.0	h	75.2	43.0	47.9	42.0	44.3	17.5
41	M04-4715	41.5	h	73.6	8.8	28.6	44.3	38.7	55.0
42	M05-1172	33.1		52.9	21.2	26.5	49.7	33.0	15.0
43	M05*1589	31.1		45.4	15.5	28.1	33.1	34.7	30.0
44	M05-1531	24.5	l	34.7	12.7	13.4	33.0	33.0	20.0
45	OH04-213-39	40.6	h	59.6	55.5	44.9	36.3	34.7	12.5
46	OH04-264-58	38.3		49.4	28.7	32.1	39.1	40.3	40.0
47	OH04-268-39	39.2		63.1	22.9	40.2	28.8	50.0	30.0
48	OH04-176-29	34.0		66.9	16.0	28.6	44.3	12.5	.
49	OH03-41-45	35.3		59.1	16.6	37.0	30.1	38.7	30.0
50	DH ACF112103 -8T	35.7		40.3	49.0	18.3	46.5	50.0	10.0
51	RCUOGF110202D/4	31.1		38.1	21.5	16.9	23.3	44.3	42.5
52	RCUOGDHACF1109O2D	32.4		49.6	16.9	49.1	26.7	25.0	.
53	RCATTF174/1C	37.3		60.5	14.0	34.8	36.8	50.0	27.5
54	RCATTF203/2	37.6		50.6	21.1	48.8	33.3	44.3	27.5
55	RCATL31	38.4		66.4	24.4	45.2	16.8	55.3	22.5
56	IL01-34159	16.2	l	11.9	18.5	4.6	34.7	10.0	.
57	IL79-002T-B-B	26.3	l	37.6	17.6	12.6	21.1	29.0	40.0
58	IL04-7874	30.0		40.2	22.1	25.0	30.4	34.7	27.5
59	IL04-8445	30.5		33.4	21.1	24.1	45.0	44.3	15.0
60	IL04-17204	33.2		49.3	18.4	20.8	36.7	29.0	45.0
	AVERAGE	32.7		47.6	23.1	27.8	34.3	38.7	24.6
	MINUMUM	16.2		11.9	8.7	4.6	14.4	10.0	7.5
	MAXIMUM	51.8		87.1	55.5	53.0	55.3	66.0	60.0
	LSD(0.05)	12.3		.	.	.	.	.	.

Table 24. Mean field severity (SEV, %) from the 2008 PNUWWSN

ENTRY	NAME	AVG		ILURB	INLAF	KYLEX	MIELA	MOCOL	ONRID	VABLA
1	ERNIE	57.9	l	83.3	29.5	70.0	64.9	100.0	40.0	17.5
2	TRUMAN	58.4	l	71.7	30.2	85.0	44.3	100.0	60.0	17.5
3	FREEDOM	67.5		90.0	32.2	80.0	77.9	100.0	70.0	22.5
4	PIONEER 2545	85.8	h	100.0	90.7	75.0	94.8	100.0	80.0	60.0
5	MSU Line E2043	84.5	h	95.0	53.9	85.0	91.6	100.0	83.3	82.5
6	MSU Line E6059	85.5	h	93.3	53.5	95.0	91.5	100.0	80.0	85.0
7	MSU Line E6042	50.8	l	76.7	40.6	30.0	55.0	90.0	43.3	20.0
8	MSU Line E6038	63.3		90.0	65.6	45.0	80.1	100.0	50.0	12.5
9	MSU Line E5024	76.0	h	96.7	41.0	95.0	82.9	100.0	86.7	30.0
10	P.992192A1-5-4-5-81	79.6	h	96.7	74.4	70.0	93.1	100.0	83.3	40.0
11	P.0172A1-12-1	49.7	l	60.0	15.0	30.0	60.5	100.0	70.0	12.5
12	P.0175A1-37-4	63.3		90.0	7.0	60.0	83.3	100.0	80.0	22.5
13	P.04281A1-4-5	74.9	h	90.0	50.0	75.0	69.5	100.0	80.0	60.0
14	P.04287A1-16	66.5		100.0	22.0	55.0	78.5	100.0	80.0	30.0
15	P.03630A1-18	61.5	l	95.0	32.5	25.0	82.0	100.0	73.3	22.5
16	MO050600	60.6	l	73.3	80.0	30.0	50.9	90.0	80.0	20.0
17	MO050261	65.6		96.7	12.5	55.0	87.5	100.0	90.0	17.5
18	MO051150	75.0	h	91.7	56.3	95.0	80.9	100.0	73.3	27.5
19	MO050617	78.8	h	95.0	68.6	95.0	81.6	100.0	76.7	35.0
20	MO041020	66.7		88.3	29.4	90.0	58.5	100.0	83.3	17.5
21	MO050917	77.0	h	93.3	22.5	95.0	92.2	100.0	83.3	52.5
22	VA06W-553	65.1		90.0	28.5	65.0	79.9	100.0	80.0	12.5
23	VA06W-558	55.3	l	83.3	21.9	70.0	69.4	90.0	40.0	12.5
24	VA06W-561	59.7	l	91.7	23.0	50.0	73.1	100.0	60.0	20.0
25	VA06W-615	70.3	h	85.0	44.4	80.0	69.9	100.0	70.0	42.5
26	VA06W-622	70.6	h	95.0	61.0	60.0	92.6	90.0	73.3	22.5
27	TRIBUTE	63.9		83.3	67.5	55.0	62.0	100.0	66.7	12.5
28	BDLS. HONEY-6	75.5	h	100.0	41.5	90.0	85.3	100.0	76.7	35.0
29	SE98 1083-14	64.8		76.7	57.1	40.0	87.9	100.0	76.7	15.0
30	SEKY93 C-1699-14	70.9	h	90.0	84.4	50.0	76.0	100.0	73.3	22.5
31	SE94 C-0480-2-2	73.4	h	98.3	50.5	70.0	85.8	100.0	76.7	32.5
32	SE98 1106-6	71.1	h	88.3	48.0	65.0	90.7	90.0	83.3	32.5
33	SE94-1012-25	72.8	h	100.0	54.5	50.0	92.4	100.0	80.0	32.5
34	KY02C-3005-25	52.0	l	36.7	7.5	95.0	39.5	100.0	70.0	15.0
35	KY02C-3005-44	64.6		85.0	13.0	70.0	76.7	100.0	80.0	27.5
36	KY02C-3008-05	68.4		85.0	16.7	80.0	86.0	100.0	83.3	27.5
37	KY02C-3004-04	63.6		63.3	50.6	65.0	68.3	100.0	73.3	25.0
38	KY01C-1542-07	82.4	h	100.0	100.0	60.0	88.4	100.0	83.3	45.0
39	KY99C-1205-06-1	75.0	h	100.0	68.8	55.0	91.3	100.0	80.0	30.0
40	M04-4566	74.9	h	95.0	66.1	85.0	91.3	100.0	66.7	20.0
41	M04-4715	70.1	h	96.7	81.5	35.0	72.0	100.0	73.3	32.5
42	M05-1172	72.1	h	91.7	52.5	80.0	91.4	100.0	66.7	22.5
43	M05*1589	67.6		96.7	29.0	55.0	84.7	100.0	80.0	27.5
44	M05-1531	64.4		81.7	29.3	90.0	55.8	100.0	76.7	17.5
45	OH04-213-39	73.2	h	88.3	55.0	90.0	71.5	100.0	80.0	27.5
46	OH04-264-58	77.0	h	96.7	39.5	95.0	87.9	100.0	80.0	40.0
47	OH04-268-39	83.9	h	93.3	79.4	90.0	67.1	100.0	90.0	67.5
48	OH04-176-29	69.3		86.7	59.0	75.0	76.0	76.7	12.5	.
49	OH03-41-45	67.6		90.0	83.9	40.0	74.3	90.0	70.0	25.0
50	DH ACF112103 -8T	73.8	h	88.3	35.6	95.0	61.3	100.0	86.7	50.0
51	RCUOGF110202D/4	59.5	l	88.3	32.5	60.0	39.2	100.0	76.7	20.0
52	RCUOGDHACF1109O2D	58.3	l	70.0	61.0	45.0	100.0	40.0	27.5	.
53	RCATTF174/1C	74.0	h	93.3	28.0	75.0	82.8	100.0	76.7	62.5
54	RCATTF203/2	83.3	h	95.0	74.0	90.0	78.2	100.0	73.3	72.5
55	RCATL31	71.0	h	85.0	93.5	40.0	73.8	80.0	70.0	55.0
56	IL01-34159	45.9	l	33.3	20.7	85.0	15.7	73.3	17.5	.
57	IL79-002T-B-B	60.2	l	80.0	28.1	60.0	71.6	100.0	66.7	15.0
58	IL04-7874	65.9		73.3	50.0	65.0	65.7	100.0	70.0	37.5
59	IL04-8445	59.8	l	83.3	33.0	40.0	74.2	100.0	73.3	15.0
60	IL04-17204	60.4	l	80.0	52.5	55.0	55.5	100.0	60.0	20.0
	AVERAGE	68.3		86.7	47.2	67.5	75.1	96.8	71.1	31.5
	MINUMUM	45.9		33.3	7.0	25.0	15.7	40.0	12.5	12.5
	MAXIMUM	85.8		100.0	100.0	95.0	100.0	100.0	90.0	85.0
	LSD(0.05)	15.6		.	.	.	.	.	.	.

Table 25. Mean index (IND, %) from the 2008 PNUWWSN

ENTRY	NAME	AVG		ILURB	KYLEX	MIELA	MOCOL	OHWOO	ONRID	ROMAN	VABLA
1	ERNIE	18.5	l	30.2	15.3	10.8	21.3	11.9	11.9	42.0	4.3
2	TRUMAN	17.2	l	21.0	13.8	5.3	27.4	8.4	9.8	51.0	1.1
3	FREEDOM	24.9		41.7	15.8	27.0	45.6	21.0	21.1	21.4	5.6
4	PIONEER 2545	42.5	h	63.5	30.8	31.7	50.0	43.1	48.5	48.3	24.0
5	MSU Line E2043	33.2		54.7	36.9	28.4	24.2	25.7	45.9	31.5	18.4
6	MSU Line E6059	33.8	h	61.6	44.0	26.7	40.1	16.8	34.9	31.6	14.5
7	MSU Line E6042	20.7		33.7	3.2	28.3	19.1	7.2	11.4	57.5	4.8
8	MSU Line E6038	25.8		37.1	9.2	43.2	40.0	6.8	14.6	51.4	4.1
9	MSU Line E5024	29.1		53.5	42.4	17.2	38.0	8.9	38.2	28.3	6.0
10	P.992192A1-5-4-5-81	32.7		50.8	12.7	29.9	27.4	15.4	50.4	60.8	14.5
11	P.0172A1-12-1	9.4	l	14.9	4.6	5.9	14.4	1.9	21.1	11.1	1.4
12	P.0175A1-37-4	15.7	l	30.9	9.8	8.4	23.1	7.1	30.9	11.0	4.8
13	P.04281A1-4-5	27.7		30.9	17.0	15.2	55.3	14.4	35.5	37.1	16.0
14	P.04287A1-16	26.3		40.9	19.5	23.0	34.6	15.8	43.2	30.4	3.4
15	P.03630A1-18	18.9	l	33.3	2.2	11.2	33.9	11.3	28.7	23.1	7.3
16	MO050600	24.3		39.4	3.0	21.6	21.4	13.8	48.5	44.0	2.4
17	MO050261	22.9		37.9	11.7	17.6	36.5	10.0	49.8	17.1	2.9
18	MO051150	25.2		53.3	34.6	15.7	27.8	12.3	24.2	30.3	3.6
19	MO050617	32.0		62.5	20.1	26.1	49.4	19.7	22.1	44.8	11.5
20	MO041020	20.1		33.5	20.4	10.3	25.0	10.0	28.8	31.6	1.3
21	MO050917	28.1		55.6	30.4	19.1	32.3	8.7	32.6	30.6	15.1
22	VA06W-553	16.9	l	27.8	8.3	7.6	27.8	7.0	28.1	21.6	6.8
23	VA06W-558	15.3	l	23.2	12.3	15.9	19.4	5.7	7.9	31.2	6.6
24	VA06W-561	16.8	l	23.2	8.8	12.9	33.5	7.3	9.8	36.7	2.5
25	VA06W-615	25.5		30.4	18.0	18.7	39.6	17.2	31.0	22.4	26.8
26	VA06W-622	23.0		24.5	10.7	23.5	21.8	17.1	22.2	58.5	5.3
27	TRIBUTE	23.8		38.6	9.6	16.6	40.8	11.8	23.6	47.5	1.6
28	BDLS. HONEY-6	39.4	h	80.1	27.5	33.8	45.7	21.3	29.3	61.5	15.8
29	SE98 1083-14	20.5		32.0	6.1	22.4	38.8	4.8	25.3	32.4	1.9
30	SEKY93 C-1699-14	28.0		50.0	9.8	31.8	34.8	20.2	32.1	42.1	3.5
31	SE94 C-0480-2-2	32.6		64.5	17.7	28.1	41.6	24.1	33.8	40.2	11.0
32	SE98 1106-6	27.2		51.1	18.1	34.6	28.6	13.9	37.1	29.5	4.9
33	SE94-1012-25	37.4	h	74.2	9.7	47.4	44.8	29.8	47.7	37.7	8.0
34	KY02C-3005-25	11.8	l	7.7	13.3	4.2	26.3	5.3	23.1	12.9	1.5
35	KY02C-3005-44	18.3	l	23.5	14.1	9.5	33.3	14.8	38.6	10.1	2.8
36	KY02C-3008-05	16.0	l	22.5	17.7	8.0	28.6	8.7	33.8	7.1	1.9
37	KY02C-3004-04	16.7	l	24.4	16.2	11.9	33.3	7.4	21.0	16.9	2.3
38	KY01C-1542-07	43.6	h	87.1	21.5	44.1	47.0	25.8	55.0	56.5	11.8
39	KY99C-1205-06-1	32.2		58.3	10.1	38.4	40.5	18.0	36.0	52.9	3.6
40	M04-4566	34.5	h	71.1	36.6	42.5	42.0	16.0	28.8	35.4	3.4
41	M04-4715	34.7	h	71.3	3.1	20.6	44.3	31.4	28.7	60.4	18.1
42	M05-1172	26.3		48.5	17.0	23.3	49.7	21.6	22.0	24.5	3.4
43	M05*1589	25.3		44.1	8.5	24.5	33.1	14.9	28.3	42.5	6.4
44	M05-1531	24.0		28.5	11.4	7.7	33.0	12.7	25.3	69.7	3.6
45	OH04-213-39	34.8	h	53.6	49.9	33.3	36.3	19.2	28.7	54.0	3.1
46	OH04-264-58	31.1		47.9	27.2	28.7	39.1	14.8	32.3	46.7	12.5
47	OH04-268-39	33.6		59.3	20.6	25.6	28.8	27.3	45.0	43.5	18.5
48	OH04-176-29	27.3		58.1	12.0	22.7	5.3	34.4	48.6	1.6	.
49	OH03-41-45	29.7		53.3	6.6	28.0	27.1	8.8	27.1	78.3	8.5
50	DH ACF112103 -8T	31.2		35.7	46.5	12.1	46.5	15.7	43.3	45.1	5.0
51	RCUOGF110202D/4	23.2		35.9	12.9	6.7	23.3	10.3	33.8	55.5	7.6
52	RCUOGDHACF110902D	23.7		34.7	7.6	49.1	6.3	11.9	52.5	7.6	.
53	RCATTF174/1C	29.3		56.4	10.5	29.9	36.8	8.1	38.3	35.6	18.8
54	RCATTF203/2	29.3		48.2	19.0	38.3	33.3	14.7	31.6	30.5	18.6
55	RCATL31	30.1		57.8	9.8	33.4	13.4	7.3	38.2	68.3	12.8
56	IL01-34159	10.6	l	4.6	15.7	0.1	7.9	25.9	9.9	1.6	.
57	IL79-002T-B-B	17.6	l	30.1	10.6	9.5	21.1	13.9	19.6	28.4	7.5
58	IL04-7874	21.9		29.8	14.4	15.9	30.4	19.6	24.7	29.7	10.3
59	IL04-8445	21.7		28.0	8.4	17.3	45.0	8.7	32.7	31.0	2.3
60	IL04-17204	21.2		39.2	10.1	11.8	36.7	15.6	18.2	27.1	10.5
	AVERAGE	25.6		42.7	16.8	21.9	32.5	15.1	30.8	36.2	8.0
	MINUMUM	9.4		4.6	2.2	0.1	5.3	1.9	7.9	1.6	1.1
	MAXIMUM	43.6		87.1	49.9	49.1	55.3	43.1	55.0	78.3	26.8
	LSD(0.05)	9.9		.	.	.	.	.	.	.	.

Table 26. Mean Fusarium damaged kernels (FDK, %) from the 2008 PNUWWSN

ENTRY	NAME	AVG	ILURB	KYLEX	MOCOL	ROMAN
1	ERNIE	25.5 l	30.0	7.6	25.0	39.4
2	TRUMAN	25.1 l	18.0	12.2	25.0	45.3
3	FREEDOM	43.1 h	53.0	10.8	80.0	28.7
4	PIONEER 2545	57.9 h	80.0	25.9	60.0	65.7
5	MSU Line E2043	62.0 h	73.0	22.1	97.0	55.8
6	MSU Line E6059	47.8 h	60.0	16.5	75.0	39.6
7	MSU Line E6042	14.2 l	17.0	8.5	20.0	11.2
8	MSU Line E6038	29.0 l	50.0	11.6	25.0	29.3
9	MSU Line E5024	27.1 l	47.0	16.0	25.0	20.6
10	P.992192A1-5-4-5-81	48.4 h	57.0	21.1	80.0	35.4
11	P.0172A1-12-1	18.7 l	13.0	6.4	20.0	35.3
12	P.0175A1-37-4	27.7 l	25.0	13.0	50.0	22.9
13	P.04281A1-4-5	43.4 h	37.0	30.4	60.0	46.4
14	P.04287A1-16	48.3 h	30.0	36.6	80.0	46.4
15	P.03630A1-18	32.6 l	40.0	7.5	50.0	33.0
16	MO050600	43.3 h	27.0	10.0	80.0	56.3
17	MO050261	37.6	30.0	17.9	75.0	27.7
18	MO051150	42.5 h	40.0	11.6	80.0	38.2
19	MO050617	36.1	47.0	12.0	40.0	45.3
20	MO041020	28.5 l	30.0	10.4	30.0	43.5
21	MO050917	39.6	40.0	10.3	60.0	48.0
22	VA06W-553	21.5 l	18.0	6.6	40.0	21.4
23	VA06W-558	25.2 l	22.0	7.0	30.0	42.0
24	VA06W-561	33.8 l	28.0	9.9	80.0	17.4
25	VA06W-615	30.9 l	25.0	18.0	50.0	30.5
26	VA06W-622	44.9 h	43.0	11.1	80.0	45.4
27	TRIBUTE	42.1	33.0	25.0	50.0	60.4
28	BDLS. HONEY-6	42.8 h	63.0	7.3	60.0	40.9
29	SE98 1083-14	31.9 l	28.0	10.6	60.0	29.2
30	SEKY93 C-1699-14	38.8	53.0	17.1	25.0	60.3
31	SE94 C-0480-2-2	44.1 h	72.0	12.5	60.0	31.8
32	SE98 1106-6	21.1 l	32.0	15.0	25.0	12.2
33	SE94-1012-25	50.0 h	75.0	6.3	80.0	38.9
34	KY02C-3005-25	27.2 l	7.0	11.9	60.0	30.0
35	KY02C-3005-44	33.5 l	37.0	10.5	60.0	26.6
36	KY02C-3008-05	37.8	37.0	7.1	80.0	27.2
37	KY02C-3004-04	23.5 l	17.0	16.7	40.0	20.3
38	KY01C-1542-07	47.0 h	63.0	11.1	60.0	53.9
39	KY99C-1205-06-1	53.3 h	57.0	29.6	80.0	46.5
40	M04-4566	53.1 h	73.0	18.9	60.0	60.7
41	M04-4715	44.5 h	67.0	19.4	40.0	51.6
42	M05-1172	42.3 h	57.0	12.2	60.0	40.2
43	M05*1589	26.8 l	33.0	13.1	25.0	36.2
44	M05-1531	42.3 h	35.0	19.1	75.0	40.0
45	OH04-213-39	55.3 h	60.0	19.6	90.0	51.7
46	OH04-264-58	52.2 h	63.0	6.9	95.0	43.9
47	OH04-268-39	53.5 h	57.0	4.2	95.0	57.9
48	OH04-176-29	27.9 l	27.0	12.3	25.5	.
49	OH03-41-45	45.0 h	37.0	12.4	60.0	70.4
50	DH ACF112103 -8T	48.6 h	33.0	17.6	90.0	54.0
51	RCUOGF110202D/4	29.5 l	47.0	11.8	25.0	34.1
52	RCUOGDHACF1109O2D	48.3 h	47.0	11.7	95.0	39.4
53	RCATTF174/1C	45.9 h	40.0	14.0	80.0	49.8
54	RCATTF203/2	27.2 l	40.0	6.5	45.0	17.4
55	RCATL31	36.6	43.0	8.2	50.0	45.3
56	IL01-34159	20.9 l	4.0	9.2	30.5	.
57	IL79-002T-B-B	33.1 l	17.0	12.1	50.0	53.2
58	IL04-7874	29.5 l	33.0	12.1	40.0	32.8
59	IL04-8445	30.3 l	33.0	13.0	40.0	35.0
60	IL04-17204	25.7 l	23.0	12.7	25.0	42.0
	AVERAGE	37.4	40.4	13.6	55.9	39.7
	MINUMUM	14.2	4.0	4.2	20.0	11.2
	MAXIMUM	62.0	80.0	36.6	97.0	70.4
	LSD(0.05)	19.8	.	.	.	.

Table 27. Mean Incidence/Severity/Kernel rating (ISK, %) from the 2008 PNUWWSN

ENTRY	NAME	AVG	ILURB	KYLEX	MOCOL	ROMAN
1	ERNIE	41.7	48.7	30.6	46.4	40.9
2	TRUMAN	42.4	37.5	35.3	48.2	48.7
3	FREEDOM	49.2 h	62.5	34.2	75.7	24.3
4	PIONEER 2545	62.7 h	81.1	45.2	69.0	55.3
5	MSU Line E2043	60.0 h	75.3	47.4	76.1	41.2
6	MSU Line E6059	56.9 h	71.7	49.0	72.0	34.8
7	MSU Line E6042	34.7 l	43.0	15.6	41.4	39.0
8	MSU Line E6038	44.6	59.4	24.3	52.0	42.6
9	MSU Line E5024	47.3	64.4	48.3	51.4	25.2
10	P.992192A1-5-4-5-81	55.8 h	67.4	34.9	70.2	50.6
11	P.0172A1-12-1	27.4 l	30.4	16.2	42.3	20.8
12	P.0175A1-37-4	36.9 l	46.8	28.1	56.9	15.8
13	P.04281A1-4-5	51.3 h	52.1	41.5	70.6	40.8
14	P.04287A1-16	51.3 h	54.3	41.8	72.4	36.8
15	P.03630A1-18	38.8 l	55.0	13.1	60.2	27.0
16	MO050600	44.9	48.4	16.0	66.1	48.9
17	MO050261	43.8	52.9	30.0	71.0	21.3
18	MO051150	52.3 h	61.0	44.1	70.4	33.5
19	MO050617	53.1 h	66.9	39.6	60.8	45.0
20	MO041020	43.5	49.9	38.0	49.5	36.4
21	MO050917	51.4 h	61.9	42.2	63.7	37.6
22	VA06W-553	36.5 l	44.0	26.0	54.4	21.6
23	VA06W-558	38.0 l	42.0	29.1	45.5	35.5
24	VA06W-561	43.0	46.5	24.2	72.1	29.0
25	VA06W-615	42.9	46.1	37.9	61.9	25.6
26	VA06W-622	50.2 h	53.5	27.8	66.3	53.3
27	TRIBUTE	49.8 h	52.3	31.8	62.3	52.7
28	BDLS. HONEY-6	59.9 h	79.4	39.1	67.7	53.3
29	SE98 1083-14	41.1 l	46.7	20.8	65.6	31.1
30	SEKY93 C-1699-14	48.1	65.0	27.7	50.4	49.3
31	SE94 C-0480-2-2	53.7 h	77.8	33.6	66.5	36.9
32	SE98 1106-6	39.9 l	56.6	33.8	46.5	22.6
33	SE94-1012-25	54.8 h	82.3	23.3	75.4	38.2
34	KY02C-3005-25	34.6 l	19.2	37.5	61.9	19.8
35	KY02C-3005-44	40.1 l	48.5	31.2	64.0	16.7
36	KY02C-3008-05	41.9	48.1	33.5	70.6	15.2
37	KY02C-3004-04	36.1 l	36.6	33.6	56.0	18.3
38	KY01C-1542-07	59.6 h	81.5	33.2	68.1	55.5
39	KY99C-1205-06-1	57.2 h	70.2	33.9	74.2	50.3
40	M04-4566	59.6 h	80.4	46.0	66.6	45.5
41	M04-4715	53.7 h	77.8	20.9	59.3	56.9
42	M05-1172	50.3 h	66.0	35.3	68.9	30.8
43	M05*1589	43.1	56.0	26.4	49.9	40.0
44	M05-1531	53.8 h	48.9	38.5	69.9	57.8
45	OH04-213-39	62.5 h	68.4	51.5	76.9	53.1
46	OH04-264-58	58.6 h	69.2	39.9	79.7	45.6
47	OH04-268-39	57.8 h	69.6	35.5	76.7	49.3
48	OH04-176-29	47.7	56.7	32.2	39.3	.
49	OH03-41-45	54.1 h	59.4	21.9	60.0	75.1
50	DH ACF112103 -8T	57.7 h	51.9	50.2	80.0	48.7
51	RCUOGF110202D/4	44.9	56.6	29.2	47.0	46.9
52	RCUOGDHACF1109O2D	52.0 h	54.6	23.2	82.7	47.3
53	RCATTF174/1C	52.2 h	62.2	32.3	73.0	41.2
54	RCATTF203/2	44.7	59.7	35.9	58.0	25.2
55	RCATL31	48.4	62.7	22.6	49.0	59.1
56	IL01-34159	27.7 l	15.3	34.8	18.1	.
57	IL79-002T-B-B	41.2 l	41.9	28.1	56.3	38.3
58	IL04-7874	41.1 l	47.4	31.0	55.1	30.9
59	IL04-8445	41.0 l	48.4	23.5	59.5	32.6
60	IL04-17204	39.8 l	48.1	27.1	51.0	33.1
	AVERAGE	47.5	56.5	32.7	61.5	38.8
	MINUMUM	27.4	15.3	13.1	18.1	15.2
	MAXIMUM	62.7	82.3	51.5	82.7	75.1
	LSD(0.05)	14.0	.	.	.	.

Table 28. Mean deoxynivalenol content of grain (DON, ppm) from the 2008 PNUWWSN

ENTRY	NAME	AVG		ILURB	INLAF	KYLEX	VABLA
1	ERNIE	11.5		15.1	13.3	16.0	1.5
2	TRUMAN	10.6		11.2	12.3	13.9	5.1
3	FREEDOM	9.5	l	17.7	5.6	11.8	2.9
4	PIONEER 2545	21.7	h	36.6	8.4	28.1	13.7
5	MSU Line E2043	22.9	h	26.0	14.1	17.4	34.2
6	MSU Line E6059	27.5	h	26.8	4.4	26.8	52.0
7	MSU Line E6042	9.3	l	11.9	8.4	10.7	6.2
8	MSU Line E6038	11.9		17.2	11.8	11.3	7.2
9	MSU Line E5024	16.6		21.7	10.1	27.6	6.9
10	P.992192A1-5-4-5-81	11.9		24.3	5.2	13.6	4.4
11	P.0172A1-12-1	4.1	l	7.9	1.5	5.0	1.9
12	P.0175A1-37-4	7.0	l	13.0	1.1	10.5	3.6
13	P.04281A1-4-5	12.5		14.9	11.0	17.7	6.5
14	P.04287A1-16	11.4		14.9	2.0	22.8	6.1
15	P.03630A1-18	5.7	l	8.6	1.1	10.8	2.3
16	MO050600	4.7	l	6.8	3.4	6.8	1.7
17	MO050261	9.1	l	14.6	2.7	16.8	2.3
18	MO051150	8.9	l	14.5	5.0	12.2	4.0
19	MO050617	10.6		18.4	7.7	12.4	4.1
20	MO041020	9.3	l	15.3	2.0	15.1	4.7
21	MO050917	10.5		20.3	2.9	7.6	11.2
22	VA06W-553	4.6	l	6.1	1.2	9.8	1.3
23	VA06W-558	4.5	l	7.4	3.5	6.3	0.7
24	VA06W-561	6.4	l	9.9	3.5	8.6	3.7
25	VA06W-615	5.8	l	7.2	6.6	7.9	1.4
26	VA06W-622	15.5		18.0	25.4	16.5	2.0
27	TRIBUTE	8.5	l	15.5	8.6	8.2	1.7
28	BDLS. HONEY-6	10.8		22.7	5.9	11.3	3.4
29	SE98 1083-14	8.2	l	11.0	12.8	7.8	1.2
30	SEKY93 C-1699-14	11.7		18.5	15.8	9.9	2.5
31	SE94 C-0480-2-2	10.9		24.7	3.7	12.1	3.1
32	SE98 1106-6	10.5		17.9	11.3	8.3	4.6
33	SE94-1012-25	11.6		24.1	7.6	9.7	5.2
34	KY02C-3005-25	3.4	l	2.6	0.9	7.0	3.3
35	KY02C-3005-44	12.6		22.7	0.7	22.0	5.0
36	KY02C-3008-05	12.7		22.5	2.5	22.9	3.1
37	KY02C-3004-04	3.9	l	5.6	2.3	6.0	1.9
38	KY01C-1542-07	18.7		40.9	14.4	12.2	7.3
39	KY99C-1205-06-1	13.2		21.3	14.2	11.6	5.6
40	M04-4566	13.6		22.8	11.3	15.4	4.8
41	M04-4715	13.9		28.0	14.4	11.6	1.5
42	M05-1172	10.8		23.8	3.7	13.1	2.8
43	M05*1589	10.2	l	19.1	2.6	13.3	5.7
44	M05-1531	8.8	l	14.8	4.5	14.0	1.8
45	OH04-213-39	9.6	l	17.7	8.3	9.1	3.2
46	OH04-264-58	14.2		26.5	5.1	20.3	5.0
47	OH04-268-39	12.8		22.6	5.6	14.3	8.8
48	OH04-176-29	5.7	l	12.7	4.3	4.2	1.8
49	OH03-41-45	10.1	l	17.2	9.4	11.5	2.3
50	DH ACF112103 -8T	10.2	l	15.4	5.6	10.6	9.3
51	RCUOGF110202D/4	12.4		20.1	5.9	19.1	4.4
52	RCUOGDHACF1109O2D	10.7		22.0	5.3	9.7	5.8
53	RCATTF174/1C	15.3		24.1	3.9	11.0	22.2
54	RCATTF203/2	16.7		25.9	4.4	13.2	23.3
55	RCATL31	17.0		30.1	14.5	8.3	15.3
56	IL01-34159	2.3	l	2.1	1.6	4.2	1.3
57	IL79-002T-B-B	5.2	l	8.0	1.8	9.0	2.0
58	IL04-7874	7.4	l	11.8	4.5	9.9	3.3
59	IL04-8445	6.7	l	11.8	4.1	8.7	2.2
60	IL04-17204	9.2	l	13.5	9.7	12.2	1.5
	AVERAGE	10.7		17.4	6.8	12.6	6.1
	MINUMUM	2.3		2.1	0.7	4.2	0.7
	MAXIMUM	27.5		40.9	25.4	28.1	52.0
	LSD(0.05)	7.9		.	.	.	.

Table 29. Mean greenhouse severity (GH, %) from the 2008 PNUWWSN

	NAME	AVG
1	ERNIE	10.5
2	TRUMAN	6.4
3	FREEDOM	12.5
4	PIONEER 2545	98.8
5	MSU Line E2043	10.5
6	MSU Line E6059	24.8
7	MSU Line E6042	49.7
8	MSU Line E6038	48.5
9	MSU Line E5024	26.7
10	P.992192A1-5-4-5-81	22.3
11	P.0172A1-12-1	13.3
12	P.0175A1-37-4	4.5
13	P.04281A1-4-5	6.6
14	P.04287A1-16	30.5
15	P.03630A1-18	4.0
16	MO050600	8.0
17	MO050261	7.5
18	MO051150	20.3
19	MO050617	16.3
20	MO041020	4.0
21	MO050917	5.8
22	VA06W-553	5.3
23	VA06W-558	43.5
24	VA06W-561	28.8
25	VA06W-615	12.7
26	VA06W-622	25.2
27	TRIBUTE	30.0
28	BDLS. HONEY-6	60.7
29	SE98 1083-14	7.8
30	SEKY93 C-1699-14	70.3
31	SE94 C-0480-2-2	65.3
32	SE98 1106-6	6.3
33	SE94-1012-25	72.0
34	KY02C-3005-25	4.0
35	KY02C-3005-44	4.0
36	KY02C-3008-05	3.0
37	KY02C-3004-04	7.7
38	KY01C-1542-07	44.3
39	KY99C-1205-06-1	28.5
40	M04-4566	65.5
41	M04-4715	76.3
42	M05-1172	29.8
43	M05*1589	21.5
44	M05-1531	22.7
45	OH04-213-39	36.5
46	OH04-264-58	23.8
47	OH04-268-39	53.3
48	OH04-176-29	29.2
49	OH03-41-45	24.5
50	DH ACF112103 -8T	7.2
51	RCUOGF110202D/4	7.0
52	RCUOGDHACF1109O2D	4.5
53	RCATTF174/1C	4.0
54	RCATTF203/2	11.0
55	RCATL31	61.2
56	IL01-34159	3.7
57	IL79-002T-B-B	4.5
58	IL04-7874	19.8
59	IL04-8445	28.2
60	IL04-17204	30.5
	AVERAGE	25.3
	MIN	3.0
	MAX	98.8

Table 30 Mean heading date (HD, julian days) from the 2008 PNUWWSN

ENTRY	NAME	AVG	ILURB	INLAF	KYLEX	MIELA	MOCOL	OHWOO	ONRID	VABLA
1	ERNIE	142 l	143	138	129	156	144	145	154	126
2	TRUMAN	148	149	146	140	159	151	149	158	134
3	FREEDOM	146	148	144	134	159	148	146	157	132
4	PIONEER 2545	145	144	142	135	158	148	146	156	133
5	MSU Line E2043	152 h	153	150	145	161	151	152	160	141
6	MSU Line E6059	149	149	147	142	161	151	149	158	138
7	MSU Line E6042	144	147	139	131	159	148	144	156	130
8	MSU Line E6038	144	147	141	131	159	148	145	155	130
9	MSU Line E5024	147	147	145	136	160	148	146	157	134
10	P.992192A1-5-4-5-81	145	145	142	134	158	148	144	156	131
11	P.0172A1-12-1	144	145	142	133	158	151	143	154	130
12	P.0175A1-37-4	145	146	140	133	159	151	145	156	131
13	P.04281A1-4-5	143	143	139	131	156	151	144	153	129
14	P.04287A1-16	144	145	139	131	159	144	143	156	131
15	P.03630A1-18	141 l	143	138	127	157	144	142	154	126
16	MO050600	146	147	143	133	160	148	147	158	131
17	MO050261	146	147	144	134	159	151	146	157	131
18	MO051150	146	146	145	138	159	148	145	156	133
19	MO050617	145	146	142	137	159	148	144	155	131
20	MO041020	148	149	147	136	161	151	147	159	134
21	MO050917	149	149	148	142	159	151	147	158	136
22	VA06W-553	144	145	140	133	156	151	144	156	128
23	VA06W-558	143	143	139	130	158	151	144	153	127
24	VA06W-561	144	144	140	132	158	151	144	155	128
25	VA06W-615	144	144	133	158	151	143	155	127	.
26	VA06W-622	142 l	144	139	128	157	144	142	156	126
27	TRIBUTE	144	144	140	132	156	151	144	155	128
28	BDLS. HONEY-6	145	146	144	134	158	148	145	156	132
29	SE98 1083-14	144	144	142	132	158	148	144	157	130
30	SEKY93 C-1699-14	144	144	140	133	158	148	145	155	130
31	SE94 C-0480-2-2	144	145	139	133	157	151	145	155	130
32	SE98 1106-6	147	146	145	136	159	148	148	157	134
33	SE94-1012-25	145	146	143	132	159	151	146	156	130
34	KY02C-3005-25	149	150	147	140	160	151	148	159	137
35	KY02C-3005-44	147	148	146	137	159	151	147	156	135
36	KY02C-3008-05	147	148	146	137	159	151	147	156	134
37	KY02C-3004-04	146	146	146	135	159	148	145	156	134
38	KY01C-1542-07	146	148	145	133	159	151	145	157	134
39	KY99C-1205-06-1	146	145	144	134	159	151	145	157	130
40	M04-4566	145	145	142	132	158	151	144	154	131
41	M04-4715	140 l	141	139	127	155	142	141	153	126
42	M05-1172	143	144	142	133	157	144	143	156	127
43	M05*1589	145	145	144	133	158	148	144	156	128
44	M05-1531	142	142	140	132	156	144	142	154	128
45	OH04-213-39	147	147	145	137	159	151	147	158	135
46	OH04-264-58	145	146	145	133	159	148	146	157	128
47	OH04-268-39	149	150	147	141	160	151	149	159	138
48	OH04-176-29	145	146	143	133	158	151	145	156	131
49	OH03-41-45	145	145	142	133	157	148	146	154	132
50	DH ACF112103 -8T	149	150	147	141	160	151	148	158	136
51	RCUOGF110202D/4	144	143	139	131	158	144	149	156	130
52	RCUOGDHACF1109O2D	150 h	151	149	139	168	151	148	160	135
53	RCATTF174/1C	148	151	147	134	160	151	148	158	137
54	RCATTF203/2	150	150	148	143	159	151	148	159	138
55	RCATL31	148	149	147	134	159	151	148	159	137
56	IL01-34159	144	143	140	137	157	148	142	153	131
57	IL79-002T-B-B	143	142	139	131	156	151	145	153	126
58	IL04-7874	144	143	139	133	156	151	144	154	129
59	IL04-8445	143	143	139	132	159	144	144	155	129
60	IL04-17204	142 l	141	138	129	157	148	142	154	125
	AVERAGE	145	146	143	134	158	149	146	156	131
	MINUMUM	140	141	133	127	151	142	141	127	125
	MAXIMUM	152	153	150	158	168	151	155	160	141
	LSD(0.05)	1.7	.	.	.	.	.	.	.	.

Table 31. Mean plant height (HGT, inches) from the 2008 PNUWWSN

ENTRY	NAME	AVG	KYLEX	MIELA
1	ERNIE	29.5 l	31.5	27.5
2	TRUMAN	35.1	38.0	32.1
3	FREEDOM	34.0	36.0	32.0
4	PIONEER 2545	32.7	35.5	29.9
5	MSU Line E2043	36.8	40.5	33.1
6	MSU Line E6059	34.0	38.5	29.5
7	MSU Line E6042	37.4	42.0	32.8
8	MSU Line E6038	37.3	39.5	35.1
9	MSU Line E5024	33.2	37.0	29.3
10	P.992192A1-5-4-5-81	29.4 l	32.5	26.2
11	P.0172A1-12-1	32.2	37.0	27.3
12	P.0175A1-37-4	30.3 l	34.5	26.0
13	P.04281A1-4-5	31.7	36.0	27.3
14	P.04287A1-16	31.3 l	35.5	27.1
15	P.03630A1-18	32.2	33.5	30.9
16	MO050600	37.3	41.0	33.6
17	MO050261	32.9	35.5	30.3
18	MO051150	34.9	39.5	30.2
19	MO050617	35.0	38.5	31.5
20	MO041020	37.2	40.5	33.8
21	MO050917	35.8	39.5	32.0
22	VA06W-553	31.5 l	33.0	30.0
23	VA06W-558	33.6	37.5	29.6
24	VA06W-561	34.2	36.0	32.3
25	VA06W-615	30.6 l	32.5	28.6
26	VA06W-622	28.4 l	29.0	27.7
27	TRIBUTE	30.1 l	32.5	27.6
28	BDLS. HONEY-6	33.9	37.0	30.8
29	SE98 1083-14	34.7	38.0	31.4
30	SEKY93 C-1699-14	35.6	39.5	31.6
31	SE94 C-0480-2-2	31.0 l	32.5	29.5
32	SE98 1106-6	33.5	35.0	31.9
33	SE94-1012-25	34.4	37.0	31.7
34	KY02C-3005-25	31.9	35.0	28.8
35	KY02C-3005-44	30.5 l	33.0	28.0
36	KY02C-3008-05	32.1	34.5	29.7
37	KY02C-3004-04	32.5	35.5	29.5
38	KY01C-1542-07	33.1	36.0	30.2
39	KY99C-1205-06-1	35.4	38.5	32.3
40	M04-4566	34.2	37.0	31.3
41	M04-4715	31.8	33.5	30.1
42	M05-1172	32.8	34.5	31.0
43	M05*1589	33.6	36.0	31.1
44	M05-1531	32.6	34.5	30.7
45	OH04-213-39	35.3	38.5	32.1
46	OH04-264-58	31.3 l	33.5	29.1
47	OH04-268-39	36.5	40.0	33.0
48	OH04-176-29	35.2	37.0	33.4
49	OH03-41-45	35.9	41.0	30.8
50	DH ACF112103 -8T	33.2	36.5	29.9
51	RCUOGF110202D/4	34.4	39.0	29.8
52	RCUOGDHACF1109O2D	35.0	37.5	32.4
53	RCATTF174/1C	42.2 h	48.0	36.4
54	RCATTF203/2	41.3 h	47.0	35.6
55	RCATL31	39.8 h	43.5	36.1
56	IL01-34159	31.3 l	34.0	28.5
57	IL79-002T-B-B	32.8	35.0	30.5
58	IL04-7874	34.4	36.0	32.8
59	IL04-8445	30.3 l	33.0	27.6
60	IL04-17204	30.5 l	33.0	27.9
	AVERAGE	33.7	36.7	30.6
	MINUMUM	28.4	29.0	26.0
	MAXIMUM	42.2	48.0	36.4
	LSD(0.05)	3.2	.	.

Table 32. Means for other traits for the 2008 PNUWWSN as reported by cooperators.

ENTRY	NAME	ILURB WINTER SURVIVAL (%)	VABLA BYDV 0 9	VABLA SGB 0-9	VABLA LR 0-9	VABLA PM 0-9	ROMAN FHB AUDPC
1	ERNIE	32	2.5	3.0	0.5	6.0	567
2	TRUMAN	87	1.0	1.0	5.5	7.5	699
3	FREEDOM	100	2.5	2.5	2.0	2.5	207
4	PIONEER 2545	100	1.5	2.5	5.5	4.0	453
5	MSU Line E2043	70	4.5	0.5	5.5	1.5	378
6	MSU Line E6059	100	2.0	5.0	5.5	7.0	358
7	MSU Line E6042	33	1.5	5.5	1.5	7.5	467
8	MSU Line E6038	2	1.5	4.5	4.0	8.5	473
9	MSU Line E5024	100	1.0	0.5	6.0	1.0	328
10	P.992192A1-5-4-5-81	100	1.0	2.5	8.5	2.0	530
11	P.0172A1-12-1	75	3.0	2.0	3.0	7.5	167
12	P.0175A1-37-4	87	1.5	4.5	3.5	6.0	154
13	P.04281A1-4-5	93	0.5	3.5	1.5	7.5	427
14	P.04287A1-16	68	1.0	3.0	0.0	3.0	324
15	P.03630A1-18	100	2.0	3.5	1.5	4.0	290
16	MO050600	70	1.0	0.0	0.0	1.0	487
17	MO050261	100	0.5	2.0	5.5	3.0	202
18	MO051150	100	0.5	2.5	0.0	5.5	297
19	MO050617	87	0.5	1.5	3.5	4.0	405
20	MO041020	100	1.0	5.0	3.5	4.0	339
21	MO050917	93	3.0	0.5	7.5	1.5	367
22	VA06W-553	73	0.5	3.5	4.5	0.5	223
23	VA06W-558	93	1.5	1.5	0.5	2.5	322
24	VA06W-561	77	0.5	3.0	2.0	3.5	380
25	VA06W-615	93	0.0	1.0	5.0	4.5	288
26	VA06W-622	100	1.0	2.5	1.5	2.0	971
27	TRIBUTE	100	1.0	0.0	0.5	2.5	522
28	BDLS. HONEY-6	100	1.5	2.5	6.5	5.0	490
29	SE98 1083-14	100	0.0	2.5	5.0	6.0	265
30	SEKY93 C-1699-14	100	4.0	2.0	8.0	7.0	429
31	SE94 C-0480-2-2	77	2.0	3.5	4.0	4.5	464
32	SE98 1106-6	100	1.5	4.5	4.5	0.5	324
33	SE94-1012-25	100	2.5	1.5	6.5	6.0	434
34	KY02C-3005-25	93	4.0	0.5	1.0	6.5	169
35	KY02C-3005-44	100	1.5	0.0	2.5	8.0	133
36	KY02C-3008-05	100	2.5	1.5	1.5	8.0	114
37	KY02C-3004-04	83	3.5	2.5	1.5	2.5	194
38	KY01C-1542-07	77	1.0	4.5	3.5	2.0	549
39	KY99C-1205-06-1	100	1.0	2.5	3.5	1.5	484
40	M04-4566	93	3.0	1.0	5.5	0.0	349
41	M04-4715	100	2.5	2.0	4.5	4.0	668
42	M05-1172	100	0.5	0.5	6.0	7.5	232
43	M05*1589	100	1.0	2.5	3.0	6.0	506
44	M05-1531	93	2.5	0.5	3.0	7.5	701
45	OH04-213-39	100	1.5	2.0	2.0	2.0	573
46	OH04-264-58	100	2.0	7.0	0.5	7.5	413
47	OH04-268-39	100	1.5	3.0	0.5	0.0	535
48	OH04-176-29	80	0.5	1.0	6.0	7.0	435
49	OH03-41-45	100	2.5	2.0	0.0	5.5	796
50	DH ACF112103 -8T	100	3.0	2.0	5.0	0.5	555
51	RCUOGF110202D/4	100	4.5	2.5	4.5	2.5	401
52	RCUOGDHACF1109O2D	100	5.0	2.5	1.5	0.0	724
53	RCATTF174/1C	100	1.5	1.0	7.0	8.0	389
54	RCATTF203/2	100	4.0	2.5	7.5	7.5	348
55	RCATL31	100	4.0	2.5	6.5	6.5	724
56	IL01-34159	100	2.5	1.5	1.5	7.0	152
57	IL79-002T-B-B	100	2.0	1.5	0.5	6.0	246
58	IL04-7874	100	0.5	0.5	4.5	5.0	346
59	IL04-8445	100	1.5	0.0	1.0	3.5	380
60	IL04-17204	100	2.0	2.5	3.0	3.0	345
	AVERAGE	91	1.9	2.3	3.5	4.4	408
	MINIMUM	2	0.0	0.0	0.0	0.0	114
	MAXIMUM	100	5.0	7.0	8.5	8.5	971

Table 33. Presence (yes) or absence (no) of genes in the entries of the 2008 PNUWWSN based on marker analyses performed by the USDA Small Grains Genotyping Lab and provided by Gina Brown-Guedira. Band size data is available from Dr. Brown-Guedira.

ENTRY	NAME	FHB1	FHB QTL from 3BS cent.	FHB3 QTL from Wuhan1	FHB QTL from 5AS Asian sources	Sr24	1RS	Sr36	H13	H9	Bx7 over-expressio n allele	Yr17/ Lr37/ Sr38	Bvd2/ Bvd3
1	ERNIE	no	**yes**	no	no	no	no	**yes**	no	no	no	no	no
2	TRUMAN	no	no	no	no	no	no	no	no	no	no	no	no
3	FREEDOM	no	**yes**	no	no	**no**	**t1RS.1BL**	**hetero**	no	no	no	no	no
4	PIONEER 2545	no	no	no	no	no	no	no	no	nd	no	no	no
5	MSU Line E2043	no	no	no	no	no	no	no	no	no	no	no	no
6	MSU Line E6059	no	no	no	no	no	no	no	no	no	nd	no	no
7	MSU Line E6042	no	no	**yes?**	no	no	no	no	no	no	nd	no	no
8	MSU Line E6038	no	no	**yes?**	no	no	no	no	no	no	no	no	no
9	MSU Line E5024	no	no	no	no	**yes**	**t1RS.1BL**	no	no	no	no	no	no
10	P.992192A1-5-4-5-81	no	no	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
11	P.0172A1-12-1	no	no	no	no	no	no		no	no	no	no	no
12	P.0175A1-37-4	no	no	no	**?**	no	**t1RS.1BL**	**yes**	no	no	**yes**	no	no
13	P.04281A1-4-5	no	**yes**	no	no	no	no	**yes**	no	no	no	no	**yes**
14	P.04287A1-16	no	no	no	no	no	**t1RS.1BL**	**yes**	no	no	no	no	**yes**
15	P.03630A1-18	**hetero**	no	no	no	no	**t1RS.1BL**	no	no	no	nd	no	no
16	MO050600	no	no	no	no	no	no	no	no	no	no	no	no
17	MO050261	no	no	no	no	no	no	no	no	no	no	no	no
18	MO051150	no	no	no	no	no	no	no	no	no	no	no	no
19	MO050617	no	no	no	no	no	no	no	no	no	no	no	no
20	MO041020	no	no	no	no	no	no	no	no	no	no	no	no
21	MO050917	no	no	no	no	no	no	no	no	no	no	no	no
22	VA06W-553	no	no	**yes?**	**hetero**	no	no	no	no	no	no	**yes**	no
23	VA06W-558	no	no	no	no	no	**t1RS.1AL**	no	no	no	no	no	no
24	VA06W-561	no	no	no	no	no	no		no	no	no	no	no
25	VA06W-615	no	no	no	no	no	no	**yes**	no	no	nd	no	no
26	VA06W-622	no	no	no	no	no	no	**yes**	no	no	no	no	no
27	TRIBUTE	nd	nd	nd	nd	no	no	no	no	no	no	no	nd
28	BDLS. HONEY-6	no	no	no		no	no	no	no	no	no	no	no
29	SE98 1083-14	no	no	no	no	no	no	no	no	no	no	no	nd
30	SEKY93 C-1699-14	no	no	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
31	SE94 C-0480-2-2	no	no	no	no	no	no	**yes**	no	no	no	no	no
32	SE98 1106-6	no	no	no	no	no	no	no	no	no	no	no	no
33	SE94-1012-25	no	no	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
34	KY02C-3005-25	**yes**	no	no	no	**yes**	**t1RS.1AL**	no	no	no	no	no	no
35	KY02C-3005-44	**yes**	no	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
36	KY02C-3008-05	**yes**	no	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
37	KY02C-3004-04	***hetero***	no	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
38	KY01C-1542-07	no	no	no	no	no	no	no	no	no	nd	no	no
39	KY99C-1205-06-1	no	no	no	no	no	no	**yes**	no	no	no	no	no
40	M04-4566	no	no	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
41	M04-4715	no	**yes**	no	no	no	**t1RS.1BL**	no	no	no	**yes**	no	no
42	M05-1172	no	**yes**	no	no	no	no	no	no	no	**yes**	no	no
43	M05*1589	no	?	no	no	no	no	no	no	no	no	no	no
44	M05-1531	nd	**yes?**	no	no	no	**t1RS.1BL**	no	no	no	no	no	no
45	OH04-213-39	no	no	no	no	no	no	no	no	no	no	no	no
46	OH04-264-58	nd	no	no	no	no	no	no	no	no	**yes**	no	no
47	OH04-268-39	no	no	no	no	no	no	no	no	no	no	no	no
48	OH04-176-29	no	no	no	no	nd	no	no	no	no	no	no	no
49	OH03-41-45	no	no	no	no	no	**t1RS.1AL**	no	no	no	no	no	no
50	DH ACF112103 -8T	no	no	no	no	no	**t1RS.1AL**	no	no	nd	no	no	no
51	RCUOGF110202D/4	no	no	no	no	no	both?	**yes**	no	no	no	no	no
52	RCUOGDHACF1109O2 D	no	no	no	no	no	both?	no	no	no	no	no	no
53	RCATTF174/1C	no	no	no	no	no	no	no	no	no	no	no	no
54	RCATTF203/2	no	no	no	no	no	no	no	no	no	no	no	no
55	RCATL31	no	no	no	no	no	no	no	no	no	**hetero**	no	no
56	IL01-34159	**yes**	**yes**	no	no	no	no	no	no	no	no	no	no
57	IL79-002T-B-B	no	no	no	no	no	no	no	no	no	no	no	no
58	IL04-7874	no	**yes**	no	no	no	no	no	no	nd	no	no	no
59	IL04-8445	no	no	no	no	no	no	no	no	no	no	no	no
60	IL04-17204	no	no	no	no	no	no	**yes**	no	no	no	no	no